



Mouse Dnmt3a DNA sequence

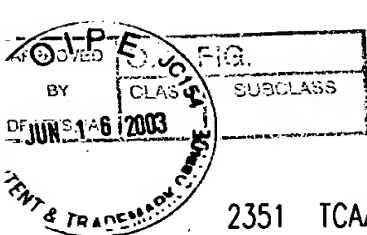
1 GAATTCCGGC CTGCTGCCGG GCCGCCCCGAC CCGCCGGGCC ACACGGCAGA
 51 GCCGCCTGAA GCCCAGCGCT GAGGCTGCAC TTTTCCGAGG GCTTGACATC
 101 AGGGTCTATG TTTAAGTCTT AGCTCTTGCT TACAAAGACC ACGGCAATTC
 151 CTTCTCTGAA GCCCTCGCAG CCCACACAGG CCCTCGCAGC CCCAGCCTGC
 201 CGCCTACTGC CCAGCAATGC CCTCCAGCGG CCCCGGGGAC ACCAGCAGCT
 251 CCTCTCTGGA GCGGGAGGAT GATCGAAAGG AAGGAGAGGA ACAGGAGGAG
 301 AACCGTGGCA AGGAAGAGCG CCAGGAGCCC AGCGCCACGG CCCGGAAGGT
 351 GGGGAGGCCT GGCCGAAGC GCAAGCAGCC ACCGGTGGAA AGCAGTGACA
 401 CCCCCAAGGA CCCAGCAGTG ACCACCAAGT CTCAGCCCAT GGCCAGGAC
 451 TCTGGCCCCT CAGATCTGCT ACCCAATGGA GACTTGAGGA AGCGGAGTGA
 501 ACCCCAACCT GAGGAGGGGA GCCCAGCTGC AGGCCAGAAG GGTGGGGCCC
 551 CAGCTGAAGG AGAGGGAAGT GAGACCCAC CAGAAGCCTC CAGAGCTGTG
 601 GAGAATGGCT GCTGTGTGAC CAAGGAAGGC CGTGGAGCCT CTGCAGGAGA
 651 GGGCAAAGAA CAGAAGCAGA CCAACATCGA ATCCATGAAA ATGAGGGGCT
 701 CCCGGGGCCG ACTGCGAGGT GGCTTGGGCT GGGAGTCCAG CCTCCGTCAG
 751 CGACCCATGC CAAGACTCAC CTTCCAGGCA GGGGACCCCT ACTACATCAG
 801 CAAACGAAA CGGGATGAGT GGCTGGCAGC TTGAAAAGG GAGGCTGAGA
 851 AGAAAGCCAA GGTAATTGCA GTAATGAATG CTGTGGAAGA GAACCAGGCC
 901 TCTGGAGAGT CTCAGAAGT GGAGGAGGCC AGCCCTCCTG CTGTGCAGCA
 951 GCCCAGGAC CCTGCTTCTC CGACTGTGGC CACCACCCCT GAGCCAGTAG
 1001 GAGGGGATGC TGGGACAAG AATGCTACCA AAGCAGCCGA CGATGAGCCT
 1051 GAGTATGAGG ATGGCCGGGG CTTTGGCATT GGAGAGCTGG TGTGGGGGAA
 1101 ACTTCGGGGC TTCTCCTGGT GGCCAGGCCG AATTGTGTCT TGGTGGATGA

FIG. 1A-1



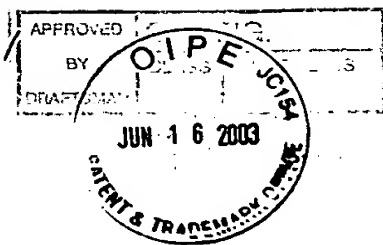
1151 CAGGCCGAG CCGAGCAGCT GAAGGCACTC GCTGGGTCAT GTGGTTCGGA
1201 GATGGCAAGT TCTCAGTGGT GTGTGTGGAG AAGCTCATGC CGCTGAGCTC
1251 CTTCTGCAGT GCATTCCACC AGGCCACCTA CAACAAGCAG CCCATGTACC
1301 GCAAAGCCAT CTACGAAGTC CTCCAGGTGG CCAGCAGCCG TGCCGGAAG
1351 CTGTTTCCAG CTTGCCATGA CAGTGATGAA AGTGACAGTG GCAAGGCTGT
1401 GGAAGTGCAG AACAAGCAGA TGATTGAATG GGCCCTCGGT GGCTTCCAGC
1451 CCTCGGTCC TAAGGGCCTG GAGCCACCAG AAGAAGAGAA GAATCCTTAC
1501 AAGGAAGTTT ACACCGACAT GTGGGTGGAG CCTGAAGCAG CTGCTTACGC
1551 CCCACCCCA CCAGCCAAGA AACCAGAAA GAGCACAACA GAGAAACCTA
1601 AGGTCAAGGA GATCATTGAT GAGCGCACAA GGGAGCGGCT GGTGTATGAG
1651 GTGCGCCAGA AGTGCAGAAA CATCGAGGAC ATTTGTATCT CATGTGGGAG
1701 CCTCAATGTC ACCCTGGAGC ACCCACTCTT CATTGGAGGC ATGTGCCAGA
1751 ACTGTAAGAA CTGCTTCTTG GAGTGTGCTT ACCAGTATGA CGACGATGGG
1801 TACCAGTCCT ATTGCACCAT CTGCTGTGGG GGGCGTGAAG TGCTCATGTG
1851 TGGGAACAAC AACTGCTGCA GGTGCTTTTG TGTCCAGTGT GTGGATCTCT
1901 TGGTGGGGCC AGGAGCTGCT CAGGCAGCCA TTAAGGAAGA CCCCTGGAAC
1951 TGCTACATGT GCGGGCATAA GGGCACCTAT GGGCTGCTGC GAAGACGGGA
2001 AGACTGGCCT TCTCGACTCC AGATGTTCTT TGCCAATAAC CATGACCAGG
2051 AATTGACCC CCCAAAGGTT TACCCACCTG TGCCAGCTGA GAAGAGGAAG
2101 CCCATCCGGG TGCTGTCTCT CTTTGATGGG ATTGCTACAG GGCTCCTGGT
2151 GCTGAAGGAC CTGGGCATCC AAGTGGACCG CTACATTGCC TCCGAGGTGT
2201 GTGAGGACTC CATCACGGTG GGCATGGTGC GGCACCAGGG AAAGATCATG
2251 TACGTCGGGG ACGTCCGCAG CGTCACACAG AAGCATATCC AGGAGTGGGG
2301 CCCATTGAC CTGGTGATTG GAGGCAGTCC CTGCAATGAC CTCTCCATTG

FIG. 1A-2



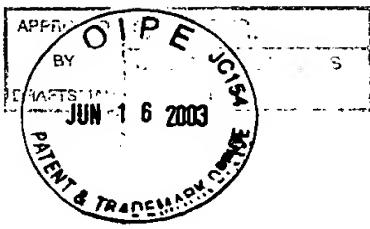
2351 TCAACCCTGC CCGCAAGGGA CTTTATGAGG GTACTGGCCG CCTCTTCTTT
2401 GAGTTCTACC GCCTCCTGCA TGATGCCGCG CCCAAGGAGG GAGATGATCG
2451 CCCCTTCTTC TGGCTCTTTG AGAATGTGGT GCCCATGGGC GTTAGTGACA
2501 AGAGGGACAT CTCGCGATTT CTTGAGTCTA ACCCCGTGAT GATTGACGCC
2551 AAAGAAGTGT CTGCTGCACA CAGGGCCCCG TACTTCTGGG GTAACCTTCC
2601 TGGCATGAAC AGGCCTTTGG CATCCACTGT GAATGATAAG CTGGAGCTGC
2651 AAGAGTGTCT GGAGCACGGC AGAATAGCCA AGTTCAGCAA AGTGAGGACC
2701 ATTACCACCA GGTCAAATC TATAAAGCAG GGCAAAGACC AGCATTTCCC
2751 CGTCTTCATG AACGAGAAGG AGGACATCCT GTGGTGCACT GAAATGGAAA
2801 GGGTGTTTGG CTTCCCCGTC CACTACACAG ACGTCTCCAA CATGAGCCGC
2851 TTGGCGAGGC AGAGACTGCT GGGCCGATCG TGGAGCGTGC CGGTCATCCG
2901 CCACCTCTTC GCTCCGCTGA AGGAATATTT TGCTTGTTG TAAGGGACAT
2951 GGGGGCAAAC TGAAGTAGTG ATGATAAAAA AGTTAAACAA ACAAACAAAC
3001 AAAAAACAAA ACAAACAAT AAAACACCAA GAACGAGAGG ACGGAGAAAA
3051 GTTCAGCACC CAGAAGAGAA AAAGGAATTT AAAGCAAACC ACAGAGGAGG
3101 AAAACGCCCG AGGGCTTGGC CTTGCAAAAG GGTGGGACAT CATCTCCTGA
3151 GTTTTCAATG TTAACCTTCA GTCCTATCTA AAAAGCAAAA TAGGCCCTC
3201 CCCTTCTTCC CCTCCGGTCC TAGGAGGCGA ACTTTTTGTT TTCTACTCTT
3251 TTTCAGAGGG GTTTTCTGTT TGTTTGGGTT TTTGTTTCTT GCTGTGACTG
3301 AAACAAGAGA GTTATTGCAG CAAAATCAGT AACAACAAAA AGTAGAAATG
3351 CCTGGAGAG GAAAGGGAGA GAGGGAAAAT TCTATAAAAA CTTAAAATAT
3401 TGGTTTTTTT TTTTTTCTT TTTCTATATA TCTCTTTGGT TGTCTCTAGC
3451 CTGATCAGAT AGGAGCACAA ACAGGAAGAG AATAGAGACC CTCGGAGGCA
3501 GAGTCTCCTC TCCCACCCCC CGAGCAGTCT CAACAGCACC ATTCCTGGTC

FIG. 1A-3



3551 ATGCAAAACA GAACCCAACT AGCAGCAGGG CGCTGAGAGA ACACCACACC
3601 AGACACTTTC TACAGTATTT CAGGTGCCTA CCACACAGGA AACCTTGAAG
3651 AAAACCAGTT TCTAGAAGCC GCTGTTACCT CTTGTTTACA GTTTATATAT
3701 ATATGATAGA TATGAGATAT ATATATATAA AAGGTACTGT TAACTACTGT
3751 ACATCCCGAC TTCATAATGG TGCTTTCAAA ACAGCGAGAT GAGCAAAGAC
3801 ATCAGCTTCC GCCTGGCCCT CTGTGCAAAG GGTTCAGCC CAGGATGGGG
3851 AGAGGGGAGC AGCTGGAGGG GGTTTTAACA AACTGAAGGA TGACCCATAT
3901 CACCCCCCAC CCCTGCCCCA TGCCTAGCTT CACCTGCCAA AAAGGGGCTC
3951 AGCTGAGGTG GTCGGACCCT GGGGAAGCTG AGTGTGGAAT TTATCCAGAC
4001 TCGCGTGCAA TAACCTTAGA ATATGAATCT AAAATGACTG CCTCAGAAAA
4051 ATGGCTTGAG AAAACATTGT CCCTGATTTT GAATTCGTCA GCCACGTTGA
4101 AGGCCCTTG TGGATCAGA AATATTCCAG AGTGAGGGAA AGTGACCCGC
4151 CATTAACCCC NCCTGGAGCA AATAAAAAAA CATACAAAAT GT

FIG. 1A-4

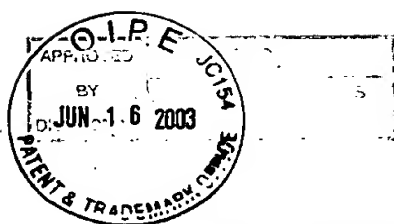


Mouse Dnmt3b1 DNA Sequence

```

1  GAATTCCGGG CGCCGGGGTT AAGCGGCCCC AGTAAACGTA GCGCAGCGAT
51  CGGCGCCGGA GATTCCGGA CCCGACACTC CGCGCCGCCC GCCGCGCAGG
101 ACCCGCGGCG CGATCGCGGC GCCGCGCTAC AGCCAGCCTC ACGACAGGCC
151 CGCTGAGGCT TGTGCCAGAC CTTGGAAACC TCAGGTATAT ACCTTTCCAG
201 ACGCGGGATC TCCCCTCCCC CATCCATAGT GCCTTGGGAC CAAATCCAGG
251 GCCTTCTTTC AGGAAACAAT GAAGGGAGAC AGCAGACATC TGAATGAAGA
301 AGAGGGTGCC AGCGGGTATG AGGAGTGCAT TATCGTTAAT GGGAACTTCA
351 GTGACCAGTC CTCAGACACG AAGGATGCTC CCTCACCCCC AGTCTTGGAG
401 GCAATCTGCA CAGAGCCAGT CTGCACACCA GAGACCAGAG GCCGCAGGTC
451 AAGCTCCCGG CTGTCTAAGA GGGAGGTCTC CAGCCTTCTG AATTACACGC
501 AGGACATGAC AGGAGATGGA GACAGAGATG ATGAAGTAGA TGATGGGAAT
551 GGCTCTGATA TTCTAATGCC AAAGCTCACC CGTGAGACCA AGGACACCAG
601 GACGCGCTCT GAAAGCCCGG CTGTCCGAAC CCGACATAGC AATGGGACCT
651 CCAGCTTGGA GAGGCAAAGA GCCTCCCCCA GAATCACCCG AGGTCCGCAG
701 GGCCGCCACC ATGTGCAGGA GTACCCTGTG GAGTTTCCGG CTACCAGGTC
751 TCGGAGACGT CGAGCATCGT CTTAGCAAG CACGCCATGG TCATCCCCTG
801 CCAGCGTCCA CTTATGGAA GAAGTGACAC CTAAGAGCGT CAGTACCCCA
851 TCAGTTGACT TGAGCCAGGA TGGAGATCAG GAGGGTATGG ATACCACACA
901 GGTGGATGCA GAGAGCAGAG ATGGAGACAG CACAGAGTAT CAGGATGATA
951 AAGAGTTTGG AATAGGTGAC CTCGTGTGGG GAAAGATCAA GGGCTTCTCC
1001 TGGTGGCCTG CCATGGTGGT GTCCTGGAAA GCCACCTCCA AGCGACAGGC
  
```

FIG. 1B-1



1051 CATGCCCCGA ATGCGCTGGG TACAGTGGTT TGGTGATGGC AAGTTTTCTG
1101 AGATCTCTGC TGACAAACTG GTGGCTCTGG GGCTGTTTAC CCAGCACTTT
1151 AATCTGGCTA CCTTCAATAA GCTGGTTTCT TATAGGAAGG CCATGTACCA
1201 CACTCTGGAG AAAGCCAGGG TTCGAGCTGG CAAGACCTTC TCCAGCAGTC
1251 CTGGAGAGTC ACTGGAGGAC CAGCTGAAGC CCATGCTGGA GTGGGCCCCAC
1301 GGTGGCTTCA AGCCTACTGG GATCGAGGGC CTCAAACCCA ACAAGAAGCA
1351 ACCAGTGGTT AATAAGTCGA AGGTGCGTCG TTCAGACAGT AGGAACTTAG
1401 AAGCCAGGAG ACGCGAGAAC AAAAGTCGAA GACGCACAAC CAATGACTCT
1451 GCTGCTTCTG AGTCCCCCCC ACCCAAGCGC CTCAAGACAA ATAGCTATGG
1501 CGGGAAGGAC CGAGGGGAGG ATGAGGAGAG CCGAGAACGG ATGGCTTCTG
1551 AAGTCACCAA CAACAAGGGC AATCTGGAAG ACCGCTGTTT GTCCTGTGGA
1601 AAGAAGAACC CTGTGTCCTT CCACCCCCTC TTTGAGGGTG GGCTCTGTCA
1651 GAGTTGCCGG GATCGCTTCC TAGAGCTCTT CTACATGTAT GATGAGGACG
1701 GCTATCAGTC CTAAGTCACC GTGTGCTGTG AGGGCCGTGA ACTGCTGCTG
1751 TGCAGTAACA CAAGCTGCTG CAGATGCTTC TGTGTGGAGT GTCTGGAGGT
1801 GCTGGTGGGC GCAGGCACAG CTGAGGATGC CAAGCTGCAG GAACCTGGA
1851 GCTGCTATAT GTGCCTCCCT CAGCGCTGCC ATGGGGTCCT CCGACGCAGG
1901 AAAGATTGGA ACATGCGCCT GCAAGACTTC TCACTACTG ATCCTGACCT
1951 GGAAGAATTT GAGCCACCCA AGTTGTACCC AGCAATTCCT GCAGCCAAAA
2001 GGAGGCCCAT TAGAGTCCTG TCTCTGTTTG ATGGAATTGC AACGGGGTAC
2051 TTGGTGCTCA AGGAGTTGGG TATTAAAGTG GAAAAGTACA TTGCCTCCGA
2101 AGTCTGTGCA GAGTCCATCG CTGTGGGAAC TGTTAAGCAT GAAGGCCAGA
2151 TCAAATATGT CAATGACGTC CGGAAAATCA CCAAGAAAAA TATTGAAGAG
2201 TGGGGCCCGT TCGACTTGGT GATTGGTGGA AGCCCATGCA ATGATCTCTC

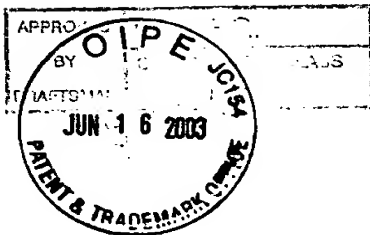
FIG. 1B-2



Appl. No. 09/720,086; 102(e): July 23, 2001
Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
Inventors: Li et al.; Tel: 202/371-2600
Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
and Uses Thereof

2251 TAACGTCAAT CCTGCCCCGA AAGGTTTATA TGAGGGCACA GGAAGGCTCT
2301 TCTTCGAGTT TTACCACTTG CTGAATTATA CCCGCCCCAA GGAGGGCGAC
2351 AACCGTCCAT TCTTCTGGAT GTTCGAGAAT GTTGTGGCCA TGAAAGTGAA
2401 TGACAAGAAA GACATCTCAA GATTCCTGGC ATGTAACCCA GTGATGATCG
2451 ATGCCATCAA GGTGTCTGCT GCTCACAGGG CCCGGTACTT CTGGGGTAAC
2501 CTACCCGGAA TGAACAGGCC CGTGATGGCT TCAAAGAATG ATAAGCTCGA
2551 GCTGCAGGAC TGCCTGGAGT TCAGTAGGAC AGCAAAGTTA AAGAAAGTGC
2601 AGACAATAAC CACCAAGTCG AACTCCATCA GACAGGGCAA AAACCAGCTT
2651 TTCCCTGTAG TCATGAATGG CAAGGACGAC GTTTTGTGGT GCACTGAGCT
2701 CGAAAGGATC TTCGGCTTCC CTGCTCACTA CACGGACGTG TCCAACATGG
2751 GCCGCGGGCG CCGTCAGAAG CTGCTGGGCA GGTCTGGAG TGTACCGGTC
2801 ATCAGACACC TGTTTGCCCC CTTGAAGGAC TACTTTGCC TGAATAGTT
2851 CTACCCAGGA CTGGGGAGCT CTCGGTCAGA GCCAGTGCCC AGAGTCACCC
2901 CTCCTGAAG GCACCTCACC TGTCCTTTT TTAGCTCACC TGTGTGGGGC
2951 CTCACATCAC TGTACCTCAG CTTTCTCCTG CTCAGTGGGA GCAGAGCCTC
3001 CTGGCCCTTG CAGGGGAGCC CCGGTGCTCC CTCCTGTGC ACAGCTCAGA
3051 CCTGGCTGCT TAGAGTAGCC CGGCATGGTG CTCATGTTCT CTTACCCTGA
3101 AACTTTAAAA CTTGAAGTAG GTAGTAAGAT GGCTTTCTTT TACCCTCCTG
3151 AGTTTATCAC TCAGAAGTGA TGGCTAAGAT ACCAAAAAA CAAACAAAAA
3201 CAGAAACAAA AAACAAAAAA AAACCTCAAC AGCTCTCTTA GTACTCAGGT
3251 TCATGCTGCA AAATCACTTG AGATTTTGTT TTTAAGTAAC CCGTGCTCCA
3301 CATTTGCTGG AGGATGCTAT TGTGAATGTG GGCTCAGATG AGCAAGGTCA
3351 AGGGGCCAAA AAAAATTCCC CCTCTCCCC CAGGAGTATT TGAAGATGAT
3401 GTTTATGGTT TAAGTCTTCC TGGCACCTTC CCCTTGCTTT GGTACAAGGG

FIG. 1B-3



Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

3451 CTGAAGTCCT GTTGGTCTTG TAGCATTTC CAGGATGATG ATGTCAGCAG
 3501 GGATGACATC ACCACCTTTA GGGCTTTTCC CTGGCAGGGG CCCATGTGGC
 3551 TAGTCCTCAC GAAGACTGGA GTAGAATGTT TGGAGCTCAG GAAGGGTGGG
 3601 TGGAGTGGCC CTCTTCAGG TGTGAGGGAT ACGAAGGAGG AAGCTTAGGG
 3651 AAATCCATTC CCCACTCCCT CTTGCCAAAT GAGGGGCCCA GTCCCAACA
 3701 GCTCAGGTCC CCAGAACCCC CTAGTTCCTC ATGAGAAGCT AGGACCAGAA
 3751 GCACATCGTT CCCCTTATCT GAGCAGTGTT TGGGGAATA CAGTGAAAAC
 3801 CTTCTGGAGA TGTTAAAAGC TTTTACCCC ACGATAGATT GTGTTTTTAA
 3851 GGGGTGCTTT TTTTAGGGGC ATCACTGGAG ATAAGAAAGC TGCATTTTCA
 3901 AAATGCCATC GTAATGGTTT TTAACACCT TTTACCTAAT TACAGGTGCT
 3951 ATTTTATAGA AGCAGACAAC ACTTCTTTTT ATGACTCTCA GACTTCTATT
 4001 TTCAITGTTAC CATTTTTTTT GTAACCGCA AGGTGTGGGC TTTGTAACT
 4051 TCACAGGTGT GGGGAGAGAC TGCCTTGTTT CAACAGTTTG TCTCCACTGG
 4101 TTTCTAATTT TTAGGTGCAA AGATGACAGA TGCCCAGAGT TTACCTTTCT
 4151 GGTTGATTAA AGTTGTATTT CTCTAAAAAA AAAAAAAAAA AAAAA

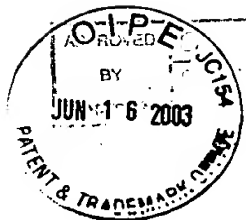
FIG. 1B-4



Human DNMT3A DNA Sequence

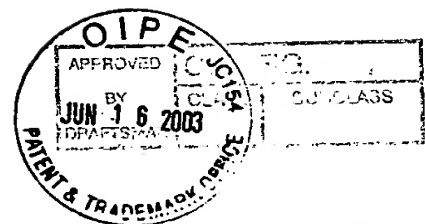
1 GCCGCGG CACCAGGGCG CGCAGCCGGG
28 CCGGCCCCGAC CCCACCGGCC ATACGGTGGG GCCATCGAAG CCCCCACCCA
78 CAGGCTGACA GAGGCACCGT TCACCAGAGG GCTCAACACC GGGATCTATG
128 TTTAAGTTTT AACTCTCGCC TCCAAAGACC ACGATAATTC CTTCCCCAAA
178 GCCCAGCAGC CCCCCAGCCC CGCGCAGCCC CAGCCTGCCT CCCGGCGCCC
228 AGATGCCCCG CATGCCCTCC AGCGGCCCCG GGGACACCAG CAGCTCTGCT
278 GCGGAGCGGG AGGAGGACCG AAAGGACGGA GAGGAGCAGG AGGAGCCGGG
328 TGGCAAGGAG GAGCGCCAAG AGCCCAGCAC CACGGCAGGG AAGGTGGGGC
378 GGCCTGGGAG GAAGCGCAAG CACCCCCCGG TGGAAAGCGG TGACACGCCA
428 AAGGACCCTG CGGTGATCTC CAAGTCCCCA TCCATGGCCC AGGACTCAGG
478 CGCCTCAGAG CTATTACCCA ATGGGGACTT GGAGAAGCGG AGTGAGCCCC
528 AGCCAGAGGA GGGGAGCCCT GCTGGGGGGC AGAAGGGCGG GGCCCCAGCA
578 GAGGGAGAGG GTGCAGCTGA GACCCTGCCT GAAGCCTCAA GAGCAGTGA
628 AAATGGCTGC TGCACCCCCA AGGAGGGCCG AGGAGCCCTT GCAGAAGCGG
678 GCAAAGAACA GAAGGAGACC AACATCGAAT CCATGAAAAT GGAGGGCTCC
728 CGGGGCCGGC TCGGGGTGG CTTGGGCTGG GAGTCCAGCC TCGTCAGCG
778 GCCCATGCCG AGGCTCACCT TCCAGGCGGG GGACCCCTAC TACATCAGCA
828 AGCGCAAGCG GGACGAGTGG CTGGCAGCT GGAAAAGGGA GGCTGAGAAG
878 AAAGCCAAGG TCAGTGCAGG AATGAATGCT GTGGAAGAAA ACCAGGGGCC
928 CGGGGAGTCT CAGAAGGTGG AGGAGGCCAG CCCTCCTGCT GTGCAGCAGC
978 CCACTGACCC CGCATCCCCC ACTGTGGCTA CCACGCCTGA GCCCGTGGGG
1028 TCCGATGCTG GGGACAAGAA TGCCACCAA GCAGGCGATG ACGAGCCAGA

FIG. 1C-1



1078 GTACGAGGAC GGCCGGGGCT TTGGCATTGG GGAGCTGGTG TGGGGGAAAC
1128 TGCGGGGCTT CTCCTGGTGG CCAGGCCGCA TTGTGTCTTG GTGGATGACG
1178 GGCCGGAGCC GAGCAGCTGA AGGCACCCGC TGGGTCATGT GGTTCGGAGA
1228 CGGCAAATTC TCAGTGGTGT GTGTTGAGAA GCTGATGCCG CTGAGCTCGT
1278 TTTGCAGTGC GTTCCACCAG GCCACGTACA ACAAGCAGCC CATGTACCGC
1328 AAAGCCATCT ACGAGGTCCT GCAGGTGGCC AGCAGCCGCG CGGGGAAGCT
1378 GTTCCCGGTG TGCCACGACA GCGATGAGAG TGACACTGCC AAGGCCGTGG
1428 AGGTGCAGAA CAAGCCCATG ATTGAATGGG CCCTGGGGGG CTTCACGCT
1478 TCTGGCCCTA AGGGCCTGGA GCCACCAGAA GAAGAGAAGA ATCCCTACAA
1528 AGAAGTGATC ACGGACATGT GGGTGAACC TGAGGCAGCT GCCTACGCAC
1578 CACCTCCACC AGCCAAAAG CCCCAGAAGA GCACAGCGGA GAAGCCCAAG
1628 GTCAAGGAGA TTATTGATGA GCGACAAGA GAGCGGCTGG TGTACGAGGT
1678 GCGGCAGAAG TGCCGAACA TTGAGGACAT CTGCATCTCC TGTGGGAGCC
1728 TCAATGTTAC CCTGGAACAC CCCCTCTTCG TTGGAGGAAT GTGCCAAAAC
1778 TGCAAGAACT GCTTTCTGGA GTGTGCGTAC CAGTACGACG ACGACGGCTA
1828 CCAGTCCTAC TGCACCATCT GCTGTGGGGG CCGTGAGGTG CTCATGTGGC
1878 GAAACAACAA CTGCTGCAGG TGCTTTTGGC TGGAGTGTGT GGACCTCTTG
1928 GTGGGGCCGG GGGCTGCCCA GGCAGCCATT AAGGAAGACC CCTGGAAGTG
1978 CTACATGTGC GGGCACAAGG GTACCTACGG GCTGCTGCGG CGGCGAGAGG
2028 ACTGGCCCTC CCGGCTCCAG ATGTTCTTCG CTAATAACCA CGACCAGGAA
2078 TTTGACCCTC CAAAGGTTTA CCCACCTGTC CCAGCTGAGA AGAGGAAGCC
2128 CATCCGGGTG CTGTCTCTCT TTGATGGAAT CGCTACAGGG CTCCTGGTGC
2178 TGAAGGACTT GGGCATTGAG GTGGACCGCT ACATTGCCTC GGAGGTGTGT

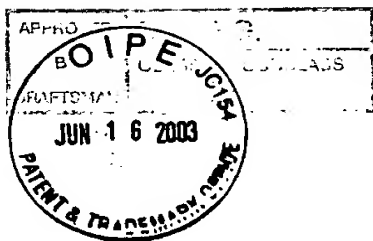
FIG. 1C-2



Appl. No. 09/720,085; 102(e): July 23, 2001
Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
Inventors: Li et al.; Tel: 202/371-2600
Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
and Uses Thereof

2228 GAGGACTCCA TCACGGTGGG CATGGTGCGG CACCAGGGGA AGATCATGTA
2278 CGTCGGGGAC GTCCGCAGCG TCACACAGAA GCATATCCAG GAGTGGGGCC
2328 CATTGATCT GGTGATTGGG GGCAGTCCCT GCAATGACCT CTCCATCGTC
2378 AACCTGCTC GCAAGGGCCT CTACGAGGGC ACTGGCCGGC TCTTCTTTGA
2428 GTTCTACCGC CTCCTGCATG ATGCGCGGCC CAAGGAGGGA GATGATCGCC
2478 CCTTCTTCTG GCTCTTTGAG AATGTGGTGG CCATGGGCGT TAGTGACAAG
2528 AGGGACATCT CGCGATTTCT CGAGTCCAAC CCTGTGATGA TTGATGCCAA
2578 AGAAGTGTC GCTGCACACA GGGCCCGCTA CTTCTGGGGT AACCTTCCCC
2628 GTATGAACAG GCCGTTGGCA TCCACTGTGA ATGATAAGCT GGAGCTGCAG
2678 GAGTGTCTGG AGCATGGCAG GATAGCCAAG TTCAGCAAAG TGAGGACCAT
2728 TACTACGAGG TCAAACCTCA TAAAGCAGGG CAAAGACCAG CATTTTCTCTG
2778 TCTTCATGAA TGAGAAAGAG GACATCTTAT GGTGCACTGA AATGGAAGG
2828 GTATTTGGTT TCCAGTCCA CTATACTGAC GTCTCCAACA TGAGCCGCTT
2878 GGCGAGGCAG AGACTGCTGG GCCGGTCATG GAGCGTGCCA GTCATCCGCC
2928 ACCTCTTCGC TCCGCTGAAG GAGTATTTTG CGTGTGTGTA AGGGACATGG
2978 GGGCAAACCTG AGGTAGCGAC ACAAAGTTAA ACAAACAAAC AAAAAACACA
3028 AAACATAATA AAACACCAAG AACATGAGGA TGGAGAGAAG TATCAGCACC
3078 CAGAAGAGAA AAAGGAATTT AAAACAAAAA CCACAGAGGC GGAAATACCG
3128 GAGGGCTTTG CCTTGGGAAA AGGTTGGAC ATCATCTCCT GATTTTTCOA
3178 TGTTATTCTT CAGTCCTATT TAAAAACAAA ACCAAGCTCC CTTCCCTTCC
3228 TCCCCCTTCC CTTTTTTTTT GGTGACACCT TTTATTTTCT ACTCTTTTCA
3278 GAGGGGTTTT CTGTTTGTGTT GGGTTTTGTT TCTTGCTGTG ACTGAAACAA
3328 GAAGGTTATT GCAGCAAAAA TCAGTAACAA AAAATAGTAA CAATACCTTG
3378 CAGAGGAAAG GTGGGAGGAG AGGAAAAAAG GGAAATTTTT AAAGAAATCT

FIG. 1C-3



Appl. No. 09/720,086, 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

3428 ATATATTGGG TTGTTTTTTT TTTTGTTTTT TGTTTTTTTT TTTTGGGTTT
 3478 TTTTTTTTTA CTATATAICT TTTTTTTGTT GTCTCTAGCC TGATCAGATA
 3528 GGAGCACAAG CAGGGGACGG AAAGAGAGAG AACTCAGGC GGCAGCATTC
 3578 CCTCCCAGCC ACTGAGCTGT CGTGCCAGCA CCATTCTGG TCACGCAAAA
 3628 CAGAACCCAG TTAGCAGCAG GGAGACCAGA ACACCACACA AGACATTTTT
 3678 CTACAGTATT TCAGGTGCCT ACCACACAGG AACCTTGAA GAAAATCAGT
 3728 TTCTAGAAGC CGCTGTTACC TCTGTTTAC AGTTTATATA TATATGATAG
 3778 ATATGAGATA TATATATAAA AGGTACTGTT AACTACTGTA CAACCCGACT
 3828 TCATAATGGT GCTTTCAAAC AGCGAGATGA GTAAAACAT CAGCTTCCAC
 3878 GTTGCCTTCT GCGCAAAGGG TTTCACCAAG GATGGAGAAA GGGAGACAGC
 3928 TTGCAGATGG CGCGTTCTCA CGGTGGGCTC TTCCCCTGG TTTGTAACGA
 3978 AGTGAAGGAG GAGAACTTGG GAGCCAGGTT CTCCCTGCCA AAAAGGGGGC
 4028 TAGATGAGGT GGTGGGGCCC GTGGACAGCT GAGAGTGGGA TTCATCCAGA
 4078 CTCATGCAAT AACCTTTGA TTGTTTTCTA AAAGGAGACT CCCTCGGCAA
 4128 GATGGCAGAG GGTACGGAGT CTTCAGGCCC AGTTTCTCAC TTTAGCCAAT
 4178 TCGAGGGCTC CTTGTGGTGG GATCAGAACT AATCCAGAGT GTGGGAAAGT
 4228 GACAGTCAAA ACCCCACCTG GAGCAAATAA AAAACATAC AAAACGTAAA
 4278 AAAAAAAAAA AAAAAA

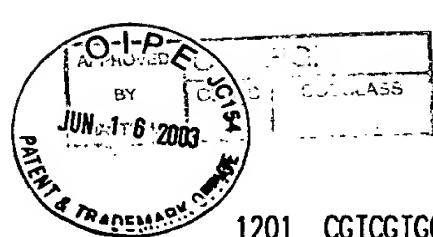
FIG. 1C-4



Human DNMT3B1 DNA Sequence:

1 GGCCGCGAAT TCGGCACGAG CCCTGCACGG CCGCCAGCCG GCCTCCCGCC
 51 AGCCAGCCCC GACCCGCGGC TCCGCCGCC AGCCGCGCCC CAGCCAGCCC
 101 TCGGCAGGA AAGCATGAAG GGAGACACCA GGCATCTCAA TGGAGAGGAG
 151 GACGCCGGCG GGAGGAAGA CTCGATCCTC GTCAACGGGG CCTGCAGCGA
 201 CCAGTCCTCC GACTCGCCCC CAATCCTGGA GGCTATCCGC ACCCCGGAGA
 251 TCAGAGGCCG AAGATCAAGC TCGCGACTCT CCAAGAGGGA GGTGTCCAGT
 301 CTGCTAAGCT ACACACAGGA CTTGACAGGC GATGGCGACG GGAAGATGG
 351 GGATGGCTCT GACACCCAG TCATGCCAAA GCTCTTCCGG GAAACCAGGA
 401 CTCGTTTACA AAGCCCAGCT GTCCGAAGTC GAAATAACAA CAGTGTCTCC
 451 AGCCGGGAGA GGCACAGGCC TTCCCCACGT TCCACCCGAG GCCGGCAGGG
 501 CCGCAACCAT GTGGACGAGT CCCCCGTGGA GTTCCCGGCT ACCAGGTCCC
 551 TGAGACGGCG GGCAACAGCA TCGGCAGGAA CGCCATGGCC GTCCCCTCCC
 601 AGCTCTTACC TTACCATCGA CCTCACAGAC GACACAGAGG ACACACATGG
 651 GACGCCCCAG AGCAGCAGTA CCCCCTACGC CCCCTAGCC CAGGACAGCC
 701 AGCAGGGGGG CATGGAGTCC CCGCAGGTGG AGGCAGACAG TGGAGATGGA
 751 GACAGTTCAG AGTATCAGGA TGGGAAGGAG TTTGGAATAG GGGACCTCGT
 801 GTGGGAAAG ATCAAGGCT TCTCCTGGTG GCCCGCCATG GTGGTGTCTT
 851 GGAAGGCCAC CTCCAAGCGA CAGGCTATGT CTGGCATGCC GTGGGTCCAG
 901 TGGTTTGGCG ATGGCAAGTT CTCCGAGGTC TCTGCAGACA AACTGGTGGC
 951 ACTGGGGCTG TTCAGCCAGC ACTTTAATTT GGCCACCTTC AATAAGCTCG
 1001 TCTCCTATCG AAAAGCCATG TACCATGCTC TGGAGAAAGC TAGGGTGCGA
 1051 GCTGGCAAGA CCTTCCCCAG CAGCCCTGGA GACTCATTGG AGGACCAGCT
 1101 GAAGCCCATG TTGGAGTGGG CCCACGGGGG CTTCAAGCCC ACTGGGATCG
 1151 AGGGCCTCAA ACCCAACAAC ACGCAACCAG TGGTTAATAA GTCGAAGGTG

FIG. 1D-1



1201 CGTCGTGCAG GCAGTAGGAA ATTAGAATCA AGGAAATACG AGAACAAGAC
 1251 TCGAAGACGC ACAGCTGACG ACTCAGCCAC CTCTGACTAC TGGCCCGCAC
 1301 CCAAGCGCCT CAAGACAAAT TGCTATAACA ACGGCAAAGA CCGAGGGGAT
 1351 GAAGATCAGA GCCGAGAACA AATGGCTTCA GATGTTGCCA ACAACAAGAG
 1401 CAGCCTGGAA GATGCCTGTT TGTCTTGTGG CAGGAAAAAC CCCGTGTCCT
 1451 TCCACCCTCT CTTTGAGGGG GGGCTCTGTC AGACATGCCG GGATCGCTTC
 1501 CTTGAGCTGT TTTACATGTA TGATGACGAT GGCTATCAGT CTTACTGCAC
 1551 TGTGTGCTGC GAGGGCCGAG AGCTGCTGCT TTGCAGCAAC ACGAGCTGCT
 1601 GCCGGTGTTT CTGTGTGGAG TGCCTGGAGG TGCTGGTGGG CACAGGCACA
 1651 GCGGCCGAGG CCAAGCTTCA GGAGCCCTGG AGCTGCTACA TGTGTCTCCC
 1701 GCAGCGCTGT CATGGCGTCC TGCGGCGCCG GAAGGACTGG AACGTGCGCC
 1751 TGCAGGCCTT CTTCAACAGT GACACGGGGC TTGAATACGA AGCCCCAAG
 1801 CTGTACCCTG CCATTCCCGC AGCCCGAAGG CGGCCCATTC GAGTCCTGTC
 1851 ATTGTTTGAT GGCATCGCGA CAGGCTACCT AGTCCTCAA GAGTTGGGCA
 1901 TAAAGGTAGG AAAGTACGTC GCTTCTGAAG TGTGTGAGGA GTCCATTGCT
 1951 GTTGGAACCG TGAAGCACGA GGGGAATATC AAATACGTGA ACGACGTGAG
 2001 GAACATCACA AAGAAAAATA TTGAAGAATG GGGCCCATTT GACTTGGTGA
 2051 TTGGCGGAAG CCCATGCAAC GATCTCTCAA ATGTGAATCC AGCCAGGAAA
 2101 GGCCTGTATG AGGGTACAGG CCGGCTCTTC TTCGAATTTT ACCACCTGCT
 2151 GAATTACTCA CGCCCCAAGG AGGGTGATGA CCGGCCGTTT TTCTGGATGT
 2201 TTGAGAATGT TGTAGCCATG AAGGTTGGCG ACAAGAGGGA CATCTCACGG
 2251 TTCCTGGAGT GTAATCCAGT GATGATTGAT GCCATCAAAG TTTCTGCTGC
 2301 TCACAGGGCC CGATACTTCT GGGGCAACCT ACCCGGGATG AACAGGCCCC
 2351 TGATAGCATC AAAGAATGAT AAACCTGAGC TGCAGGACTG CTTGGAATAC
 2401 AATAGGATAG CCAAGTTAAA GAAAGTACAG ACAATAACCA CCAAGTCGAA

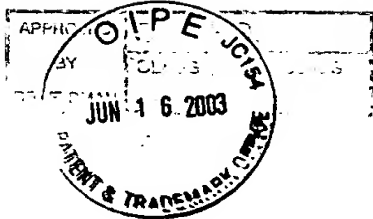
FIG. 1D-2



2451 CTCGATCAAA CAGGGGAAAA ACCAACTTTT CCCTGTTGTC ATGAATGGCA
2501 AAGAAGATGT TTTGTGGTGC ACTGAGCTCG AAAGGATCTT TGGCTTTCCT
2551 GTGCACTACA CAGACGTGTC CAACATGGGC CGTGGTGCCC GCCAGAAGCT
2601 GCTGGGAAGG TCCTGGAGCG TGCCTGTCAT CCGACACCTC TTCGCCCCTC
2651 TGAAGGACTA CTTTGCA TGT GAATAGTTCC AGCCAGGCCC CAAGCCCCT
2701 GGGGTGTGTG GCAGAGCCAG GACCCAGGAG GTGTGATTCC TGAAGGCATC
2751 CCCAGGCCCT GCTCTTCCTC AGCTGTGTGG GTCATACCGT GTACCTCAGT
2801 TCCCTCTTGC TCAGTGGGGG CAGAGCCACC TGA CTCTTGC AGGGGTAGCC
2851 TGAGGTGCCG CCTCCTTGTG CACAAATCAG ACCTGGCTGC TTGGAGCAGC
2901 CTAACACGGT GCTCATTTTT TCTTCTCCTA AAAC TTTAAA ACTTGAAGTA
2951 GGTAGCAACG TGGCTTTTTT TTTTCCCTT CCTGGGTCTA CCACTCAGAG
3001 AAACAATGGC TAAGATACCA AAACCACAGT GCCGACAGCT CTCCAATACT
3051 CAGGTTAATG CTGAAAATC ATCCAAGACA GTTATTGCAA GAGTTTAATT
3101 TTTGAAAAC TGGTACTGCT ATGTGTTTAC AGACGTGTGC AGTTGTAGGC
3151 ATGTAGCTAC AGGACATTTT TAAGGGCCCA GGATCGTTTT TTCCAGGGC
3201 AAGCAGAAGA GAAAATGTTG TATATGTCTT TTACCCGGCA CATTCCCCTT
3251 GCCTAAATAC AAGGGCTGGA GTCTGCACGG GACCTATTAG AGTATTTTCC
3301 ACAATGATGA TGATTT CAGC AGGGATGACG TCATCATCAC ATTCAGGGCT
3351 ATTTTTTCCC CCACAAACCC AAGGGCAGGG GCCACTCTTA GCTAAATCCC
3401 TCCCGTGAC TGCAATAGAA CCCTCTGGGG AGCTCAGGAA GGGGTGTGCT
3451 GAGTTCTATA ATATAAGCTG CCATATATTT TGTAGACAAG TATGGCTCCT
3501 CCATATCTCC CTCTTCCCTA GGAGAGGAGT GTGAAGCAAG GAGCTTAGAT
3551 AAGACACCCC CTCAAACCCA TTCCCTCTCC AGGAGACCTA CCCTCCACAG
3601 GCACAGGTCC CCAGATGAGA AGTCTGCTAC CCTCATTTCT CATCTTTTAA
3651 CTAAACTCAG AGGCAGTGAC AGCAGTCAGG GACAGACATA CATTCTCAT

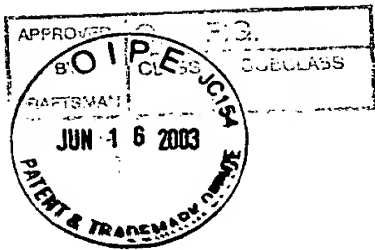
FIG. 1D-3

Appl. No. 09/720,086; 102(e): July 23, 2001
Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
Inventors: Li et al.; Tel: 202/371-2600
Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
and Uses Thereof



3701 ACCTTCCCCA CATCTGAGAG ATGACAGGGA AACTGCAAA GCTCGGTGCT
3751 CCCTTTGGAG ATTTTTTAAT CCTTTTTTAT TCCATAAGAA GTCGTTTTTA
3801 GGGAGAACGG GAATTCAGAC AAGCTGCATT TCAGAAATGC TGTCATAATG
3851 GTTTTAAACA CCTTTTACTC TTCTTACTGG TGCTATTTTG TAGAATAAGG
3901 AACAACGTTG ACAAGTTTTG TGGGGCTTTT TATACACTTT TTAAATCTC
3951 AACTTCTAT TTTTATGTTT AACGTTTCA TTAAATTTT TTTGTAAGT
4001 GAGCCACGAC GTAACAAATA TGGGGAAAAA ACTGTGCCTT GTTTCAACAG
4051 TTTTGTCTAA TTTTAGGCT GAAAGATGAC GGATGCCTAG AGTTTACCTT
4101 ATGTTTAATT AAAATCAGTA TTTGTCTAAA AAAAAAAAAA AAAAA

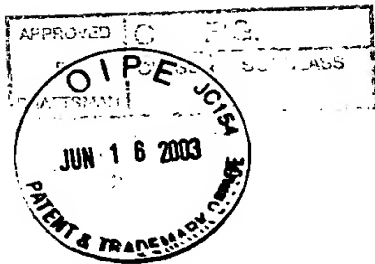
FIG. 1D-4



Mouse Dnmt3a Protein

1 MPSSGPGDTS SSSLEREDDR KEGEEQEENR GKEERQEPSA TARKVGRPGR
 51 KRKHPPVESS DTPKDAVTT KSQPMQDSG PSDLLPNGDL EKRSEQPPEE
 101 GSPAAGQKGG APAEGEGTET PPEASRAVEN GCCVTKEGRG ASAGEGKEQK
 151 QTNIESMKME GSRGRLRGGL GWESSLRQRP MPRLTFQAGD PYYISKRRKD
 201 EWLARWKREA EKKAKVIAVM NAVEENQASG ESQKVEEASP PAVQQPTDPA
 251 SPTVATTPEP VGGDAGDKNA TKAADDEPEY EDGRGFGIGE LWGKLRGFS
 301 WWPGRIVSWW MTGRSRAAEG TRWVMWFGDG KFSVVCVEKL MPLSSFCSAF
 351 HQATYNKQPM YRKAIYEVLQ VASSRAGKLF PACHDSDESD SGKAVEVQNK
 401 QMIEWALGGF QPSGPKGLEP PEECKNPYKE VYTDMMVEPE AAAAYAPPPPA
 451 KKPRKSTTEK PKVKEIIDER TRERLVYEVN QKCRNIEDIC ISCGSLNVTL
 501 EHPLFIGGMC QNCKNCFLEC AYQYDDGYQ SYCTICCGGR EVLMCGNNNC
 551 CRCFCVECVD LLVGPGAAQA AIKEDPWNCY MCGHKGTYGL LRRREDWPSR
 601 LQMFFANNHD QEFDPPKVYP PVPAEKRKPI RVLSLFDGIA TGLLVKDLG
 651 IQVDRIASE VCEDSITVGM VRHQGKIMYV GDVRSVTQKH IQEWGPFDLV
 701 IGGSPCNDLS IVNPARKGLY EGTGRLFFEF YRLLHDARPK EGDRPFFWL
 751 FENVVAMGVS DKRDISRFLE SNPVMIDAKE VSAHRARYF WGNLPGMNRP
 801 LASTVNDKLE LQECLEHGR I AKFSKVRTIT TRSNSIKQKQ DQHFVFMNE
 851 KEDILWCTEM ERVFGFPVHY TDVSNMSRLA RQRLLGRSWS VPVIRHLFAP
 901 LKEYFACV*

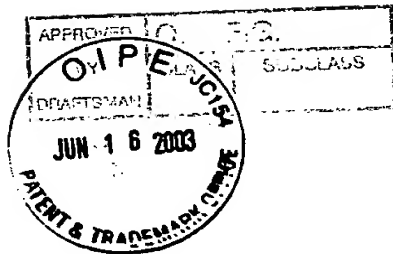
FIG. 2A



Mouse Dnmt3b1 Protein

1 MKGDSRHLNE EEGASGYEEC IIVNGNFSQ SSDTKDAPSP PVLEAICTEP
 51 VCTPETRGRR SSSRLSKREV SSLLNYTQDM TGDGDRDDEV DDGNGSDILM
 101 PKLTRETKDT RTRSESPAVR TRHSNGTSSL ERQRASPRIT RGRQGRHHVQ
 151 EYPVEFPATR SRRRRASSSA STPWSSPASV DFMEEVTPKS VSTPSVDLSQ
 201 DGDQEGMDTT QVDAESRDGD STEYQDDKEF GIGDLVWGI KGFSSWWPAMV
 251 VSWKATSKRQ AMPGMRWVQW FGDGKFSEIS ADKLVALGLF SQHFNLATFN
 301 KLVSRYKAMY HTLEKARVRA GKTFSSSPGE SLEDQLKPLM EWAHGGFKPT
 351 GIEGLKPNKK QPVVNKSKVR RSDSRNLEPR RRENKSRRRT TNSAASESP
 401 PPKRLKTSY GKGDRGEDEE SRERMASEVT NNKGNLEDR LSCGKKNPVS
 451 FHPLFEGGLC QSCRDRFLEL FYMYDEGYQ SYCTVCCEGR ELLLCNTSC
 501 CRCFCVECLE VLVGAGTAED AKLQEPWSCY MCLPQRCHGV LRRRKDWNMR
 551 LQDFFTTDPD LEEFEPKLY PAIPAAKRRP IRVLSLFDGI ATCYLVLKE
 601 GIKVEKYIAS EVCAESIAG TVKHEGQIKY VNDVRKITKK NIEEWGPFDL
 651 VIGGSPCNDL SNVNPARKGL YEGTGRLFFE FYHLLNYTRP KEGDNRPFVW
 701 MFENVVAMKV NDKKDISRFL ACNPVMIDAI KVSAAHRARY FWGNLPGMNR
 751 PVMASKNDKL ELQDCLEFSR TAKLKKVQTI TTKSNSIRQG KNQLFPVVMN
 801 GKDDVLWCTE LERIFGPAH YTDVSNMGRG ARQKLLGRSW SVPVIRHLFA
 851 PLKDYFACE*

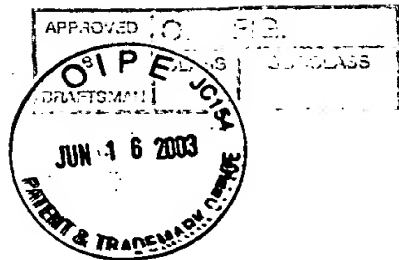
FIG. 2B



Human DNMT3A Protein

1 MPAMPSSGPG DTSSSAAERE EDRKDGEEQE EPRGKEERQE PSTTARKVGR
 51 PGRKRKHPPV ESGDTPKDPA VISKSPSMAQ DSGASELLPN GDLEKRSEPP
 101 PEEGSPAGGQ KGGAPAECEG AAETLPEASR AVENGCCTPK EGRGAPAEAG
 151 KEQKETNIES MKMEGSRGRL RGGLGWESSL RQRPMPLTF QAGDPYYISK
 201 RKRDEWLARW KREAEEKKAV IAGMNAVEEN QGPGESQKVE EASPPAVQQP
 251 TDPASPTVAT TPEVGS DAG DKNATKAGDD EPEYEDGRGF GIGELVWGKL
 301 RGF~~SW~~WPGRI VSWMTGRSR AAETR~~W~~W~~W~~W FGDGKFSVVC VEKLMPLSSF
 351 CSAFHQATYN KQPMYRKA~~I~~Y EVLQVASSRA GKLFVCHDS DESDTAKAVE
 401 VQNKPMIEWA LGGFQPSGPK GLEPPEEEKN PYKEVYTD~~W~~W VEPEAAAYAP
 451 PPPAKKPRKS TAEKPKVKEI IDERTRERLV YEVRQKCRNI EDICISCGSL
 501 NVTLEHPLFV GGMCQNCKNC FLECA~~Y~~QYDD DGYQSYCTIC CGGREVLMCG
 551 NNNCCRCFCV ECVDLLVGPG AAQAAIKEDP WNCYMC~~G~~HKG TYGLRRRED
 601 WPSRLQMFFA NNHDQEFDP K~~V~~YPPVPAEK RKPIRVLSLF DGIATGLLVL
 651 KDLGIQVD~~R~~Y IASEVCEDI TVGMVRHQGK IMYVGDVRSV TQKH~~I~~QEWGP
 701 FDLVIGGSPC NDLSIVNPAR KGLYEGTGRL FFEFYRLLD ARPKEGDDRP
 751 FFWLFENVVA MGVSDKRD~~I~~S RFLESNPVMI DAKEVSAHR ARYFWGNLPG
 801 MNRPLASTVN DKLELQECLE HGRIAKFSKV RTITTRSNSI KQK~~D~~QHFVP
 851 FMNEKEDILW CTEMERVFGF PVHYTDVSNM SRLARQRL~~L~~G RSWSVPVIRH
 901 LFAPLKEYFA CV*

FIG. 2C

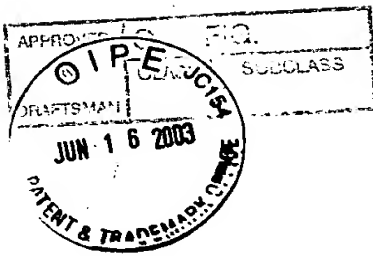


Appl. No. 09/720,086; 102(e): July 23, 2001
Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
Inventors: Li et al.; Tel: 202/371-2600
Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
and Uses Thereof

Human DNMT3B1 Protein

1 MKGDTRHLNG EEDAGGREDS ILVNGACSDQ SSDSPPILEA IRTPEIRGRR
51 SSSRLSKREV SSLLSYTQDL TGDGDGEDGD GSDTPVMPKL FRETRTRSES
101 PAVRTRNNNS VSSRERHRPS PRSTRGRQGR NHVDESPVEF PATRSLRRRA
151 TASAGTPWPS PPSSYLITDL TDDTEDHGT PQSSSTPYAR LAQDSQQGGM
201 ESPQVEADSG DGDSSEYQDG KEFGIGDLVW GKIKGFSWMP AMVVSWKATS
251 KRQAMSGMRW VQWFGDGKFS EVSADKLVAL GLFSQHFNLA TFNKLVSRYK
301 AMYHALEKAR VRAGKTFPSS PGDSLEDQLK PMLEWAHGGF KPTGIEGLKP
351 NNTQPVVNKS KVRAGSRKL ESRKYENKTR RRTADD SATS DYC PAPKRLK
401 TNCYNGKDR GDEDQSREQM ASDVANKSS LEDGCLSCGR KNPVSFHPLF
451 EGGLCQTCRD RFLELFMYD DDGYQSYCTV CCEGRELLLC SNTSCCRCFC
501 VECLEVLVGT GTAAEAKLQE PWSCYMCLPQ RCHGVLRRRK DWNVRLQAFF
551 TSDTGLEYEA PKLYPAIPAA RRRPIRVLSL FDGIATGYLV LKELGIKVGK
601 YVASEVCEES IAVGTVKHEG NIKYVNDVRN ITKKNIEEWG PFDLVIGGSP
651 CNDLSNVNPA RKGLYEGTGR LFFEFYHLLN YSRPKEGDDR PFFWMFENVV
701 AMKVGDKRDI SRFLECNPMV IDAIKVSAAH RARYFWGNLP GMNRPVIASK
751 NDKLELQDCL EYNRIAKLKK VQTITTKSNS IKQGKNQLFP VMNGKEDVL
801 WCTELERIFG FPVHYTDVSN MGRGARQKLL GRWSVPVIR HLFAPLKDYF
851 ACE*

FIG. 2D

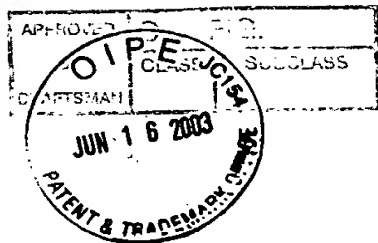


Appl. No. 09/720,086, 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

```

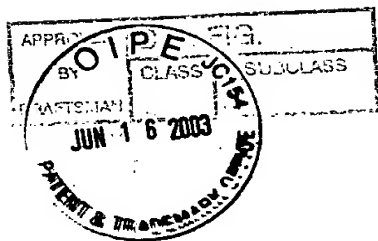
Dnmt3a  1 MPSSGPGDTSSSSLEREDDRKEGEEQEENRGKEERQEPSATARKVGRPGR 50
Dnmt3a  51 KRKHPPVESSDTPKDPVTTKSQPMADSGPSD....LLPNGDLEKRSEP 96
      . . . . . | . : : : | | : : | | . |
Dnmt3b  1 .....MKGDSRHLNEEEGASGYEECIIVNGNFSQDSSD 33
Dnmt3a  97 QPEEGSP....AAGQKGGAPAEGETETPPEAS.RAVENGCCVTKE..GR 139
      : : | | | | | | | | | | | | | | | | : : |
Dnmt3b  34 TKDAPSPPVLEAICTEPVCTPETRGRSSSRLSKREVSSLLNYTQDMTGD 83
Dnmt3a  140 G.....ASAGEG.....KEQKQTNIESMKMEGSRGRLRGGLGWESSLRQ 178
      | | | | | | | | : : | : | | | | | | |
Dnmt3b  84 GDRDDEVDDGNGSDILMPKLTRETKDTRRSESPAVRTRHSNGTSSLERQ 133
Dnmt3a  179 RPMPRLTFQAGDPYYISKRKRDEWLARWKREAEEKKAKVIAVMNAVEENQA 228
      | | | : | : : : | : . : : . . . |
Dnmt3b  134 RASPRITRGRQGRHHV.....QEYPVEFPATRSRRRRASSSASTPWSSPA 178
Dnmt3a  229 SGESQKVVEASPPAVQQTDPASPTVATTPEPVGGDAGDKNATKAADDEP 278
      | : . | | . | | | | | | | | : | | | |
Dnmt3b  179 SVDF..MEEVTPKSVSTP....SVDLSQGDQEGMDTTQVDAESRDGDST 222
Dnmt3a  279 EYEDGRGFGIGELVWGKLRGFSWWPGRIVSWWMTGRSRAAEGTRWVMWFG 328
      || : | : ||| : |||| : |||| : ||| | : . | | ||| |||
Dnmt3b  223 EYQDDKEFGIGDLVWGKIKGFSWWPAMVVSWKATSKRQAMPGRWVQWFG 272
Dnmt3a  329 DGKFSVVCVEKLMPLSSFCSAFHQATYNKQPMYRKAIYEV LQVASSRAGK 378
      |||| : : || . | | | : ||| | |||| | : | |||
Dnmt3b  273 DGKFSEISADKLVALGLFSQHFNLATFNKLVSYRKAMYHTLEKARVRAGK 322
Dnmt3a  379 LFPACHDSDES DSGKAVEVQNKQMI EWALGGFQPSGPKGLEPPEEEK..N 426
      | | | | | | | | | : ||| ||| . | | | | | : : |
Dnmt3b  323 TF.....SSSPGESLEDQLKPMLEWAHGGFKPTGIEGLKPNKKQPVVN 365
Dnmt3a  427 PYKEVYTDMW.VEP.....EAAAYAPPPPAKKPRKSTTEKPK 462
      | . | . | | : : | | | : | | : |
Dnmt3b  366 KSKVRRSDSRNLEPRRRENKSRRTTND SAASESPPPKRLKTNSYGGKDR 415
  
```

FIG.3A-1



Dnmt3a 463 VKEIIDERTRERLVYEVROKCRNIEDICISCGSLNVTLEHPFFIGGMCQN 512
|| .|||: || |:|| |:|| | || | |:||
Dnmt3b 416 GE...DEESRERMASEVTNNKGNLEDRLSCGKKNPVSFHPLFEGGLCQS 462
Dnmt3a 513 CKNCFLECAYYQDDGYQSYCTICCGGREVL MCGNNCCRCFCVECVDLL 562
|: . ||| | ||:|||||||: || |||. |: | . ||||| | :. |
Dnmt3b 463 CRDRFLELFYMYDEGDYQSYCTVCCEGRELLLCNTSCCRCFCVECLEVL 512
Dnmt3a 563 VGPGAAQAAIKEDPWNCYMC GHKGT YGLLRREDWPSRLQMFFANNHD.Q 611
|| | |: | :|||. ||| . :|. |||. || ||| | . | :
Dnmt3b 513 VGAGTAEDAKLQEPWSCYMC L PQRCHGV LRRRKDWNMR LQDFFTTDPDLE 562
Dnmt3a 612 EFDPPKVYPVPVPAEKRP IRVLSLFDGIATGLLVKDLGIQVDRIASEV 661
||: |||. || :|| ||: ||||| ||||| ||||: |||. |: |||||
Dnmt3b 563 EFEPKLYPAIPA AKRRP IRVLSLFDGIATGYLVKELGIKVEKYIASEV 612
Dnmt3a 662 CEDSITVGMVRHQGKIMYVG DRSVTQKH IQEWGPFDLVIGGSPCNDLSI 711
| :|| || |: |:|. || ||| :|. |: ||||| ||||| |||||
Dnmt3b 613 CAESIAVGTVKHEGQIKYVNDVRKITKKNIEEWGPFDLVIGGSPCNDLSN 662
Dnmt3a 712 VNPARKGLYEGTGRLFFEFYRLLHDARPKEGDDRPFFWL FENVVAMGVSD 761
||||| ||||| |||. |||||. ||||: ||||| |. |
Dnmt3b 663 VNPARKGLYEGTGRLFFEFYHLLNYTRPKEGDNRPFFWMFENVVAMKVND 712
Dnmt3a 762 KRDISRFLESNPVMIDAKEVSA AHRARYFWGNLPGMNRPLASTVNDKLEL 811
|: ||||| ||||| . ||||| ||||| ||||| . . |||||
Dnmt3b 713 KKDISRFLACNPVMIDA IKVSA AHRARYFWGNLPGMNRPMASKNDKLEL 762
Dnmt3a 812 QECLEHGRIAKFSKVRTITTRSNSIKQK DQHFVFMNEKEDILWCTEME 861
|: ||| | || ||. ||||: ||||: |||. | ||| || |: |: ||||: |
Dnmt3b 763 QDCLEFSRTAKLKKVQTITTKSNSIRQGNQLFPVVMNGKDDVLWCTELE 812
Dnmt3a 862 RVFGFPVHYTDVSNMSRLARQRL LGRSWSVPVIRHLFAPLKEYFACV* 909
|: |||| ||||| | ||: ||||| ||||| ||||: |||| |
Dnmt3b 813 RIFGFPAHYTDVSNMGRGARQKLLGRSWSVPVIRHLFAPLKDYFACE* 860

FIG.3A-2



DNMT3A 1 MPAMPSSGPGDTSSSAAEREEDRKDGEEQEEPRGKEERQEPSTTARKVGR
 DNMT3A 51 PGRKRKHPPVESGDTPKDPAVISKSPSMAQDSGASELLPNGDLEKRSEPO
 DNMT3B 1MKGDTRHLNGEEDAGGREDSILVNGACSDQSSDSP
 DNMT3A 101 PEEGSPAGGQKGGAPAEGEGAAETLPEASRAVENGCCTPKEGRGAPAEAG
 DNMT3B 36 PILEAIRTPAIRGGWASSRLSKREVSSLLSYTQDLTGDGDGEDGDGSDTP
 DNMT3A 151 KEQKETNIESMKMEGSRGRLRGGLGWESSLRQRMPRLTFQAGDPYYISK
 DNMT3B 86 VMPKLFRETRTRSESPAVRTRNNNSVSSRERHRPSRSTRGRQGRNVHDE
 DNMT3A 201 RKRDEWLARWKREAEEKKAVIAGMNAVEENQGPGESQKVEEASPPAVQQP
 DNMT3B 136 SPVEFPATRSLLRRRATASAGTPWPSPSSYLTIDLTDDTEDTH..GTPQS
 DNMT3A 251 TDPASPTVATTPEPVGSDAGDKNATKAGDDEPEYEDGRGFGIGELVWGKL
 DNMT3B 184 SSTPYARLAQDSQQGGMESPVQVEADSGDGDSEYQDGKEFGIGDLVWGKI
 DNMT3A 301 RGFSWWPGRIVSWWMTGRSRAAEGTRWVMWFGDGKFSVVCVEKLMPLSSF
 DNMT3B 234 KGFSWWPAMVVSWKATSKRQAMSGMRWVQWFGDGKFSEVSADKLVALGLF
 DNMT3A 351 CSAFHQATYNKQPMYRKAIYEVLQVASSRAGKLFVCHDSDESDTAKAVE
 DNMT3B 284 SQHFNLATFNKLVSRYKAMYHALEKARVRAGKTFP.....SSPGDSLE
 DNMT3A 401 VQNKPMIEWALGGFQPSGPKGLEP....PEEEKNPYKEVYTDMWVE....
 DNMT3B 327 DQLKPMLEWAHGGFKPTGIEGLKPNNTQPVVNKSQVRRAGSRKLESRYE
 DNMT3A 443PEAAAYAPPPAKKPRKSTAEKPKVKEIIDERTRERLVYEVRO
 DNMT3B 377 NKTRRRRTADDSATSDYCPAPKRLKTNCYNNGKDRGDEDQSREQMASDVAN

FIG.3B-1

FIG. 3B-2

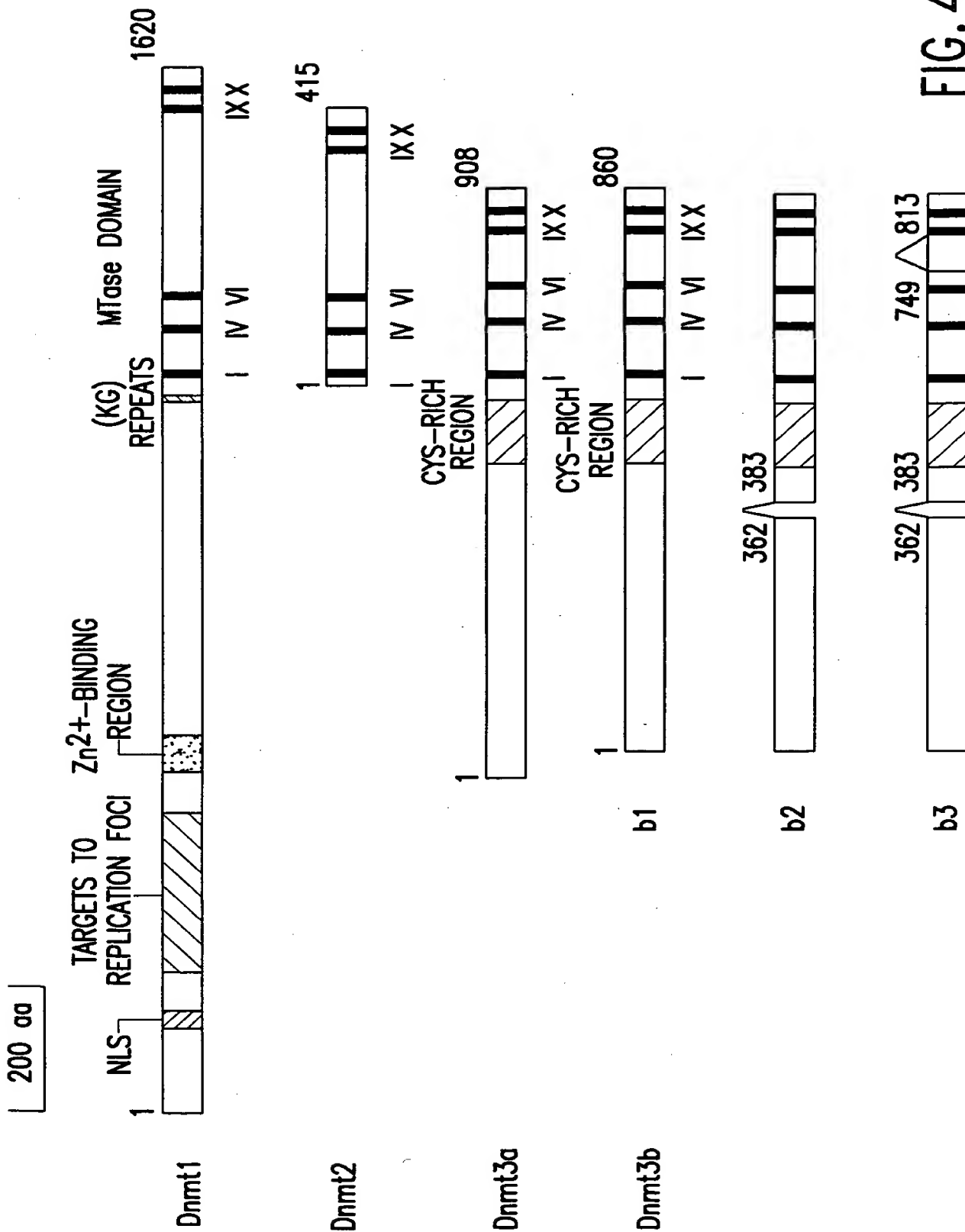
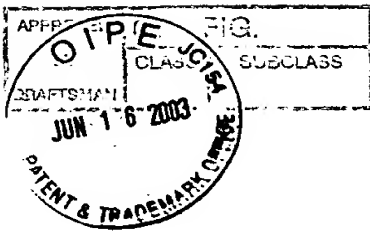


FIG. 4A

APPROVED	FIG.
BY	SUBCLASS



Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

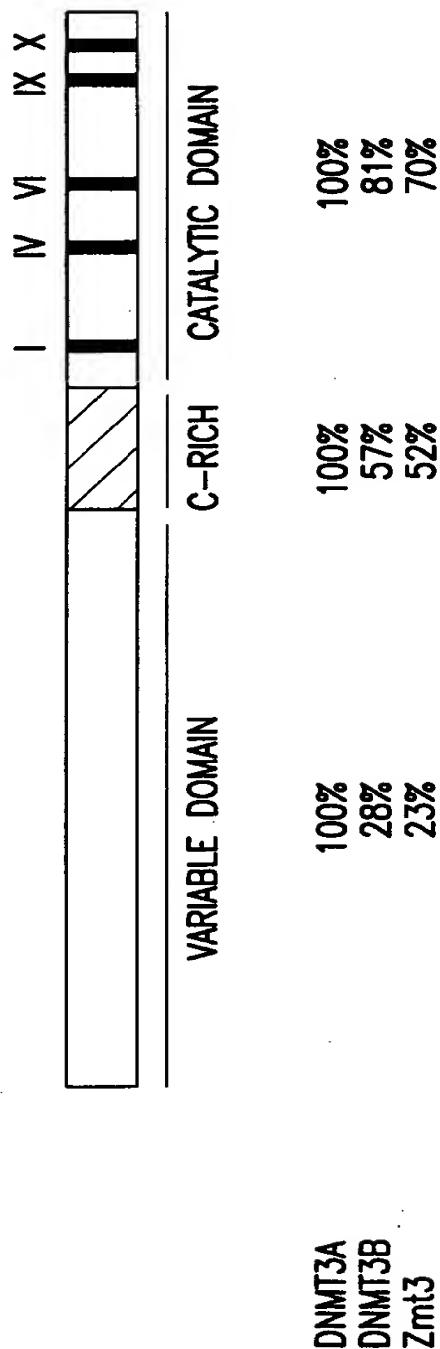


FIG. 4B

Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

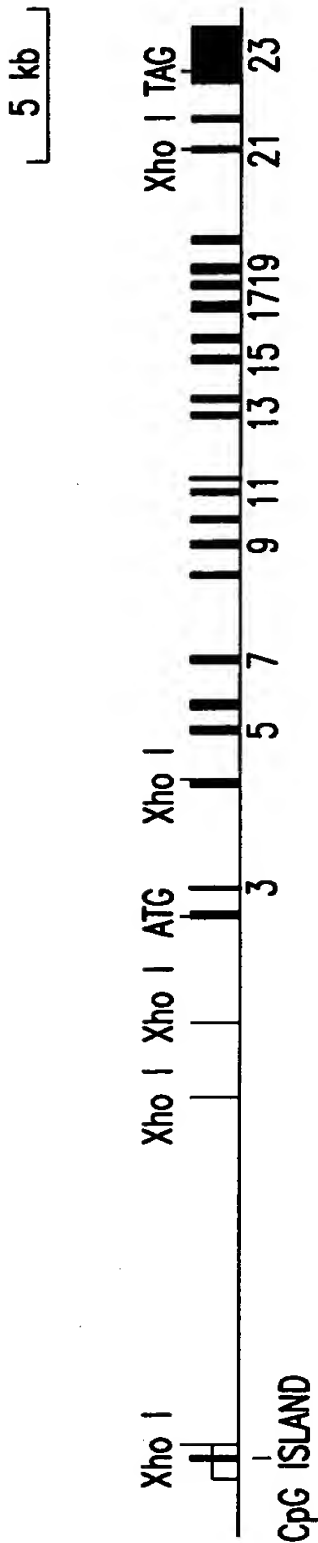
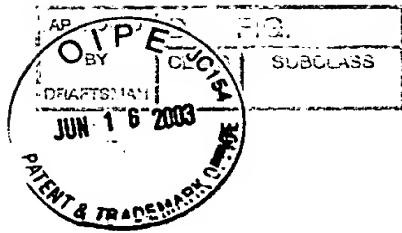
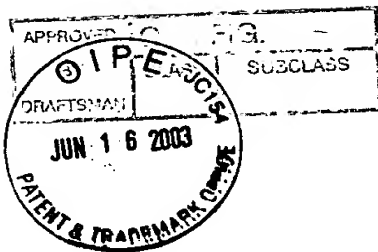


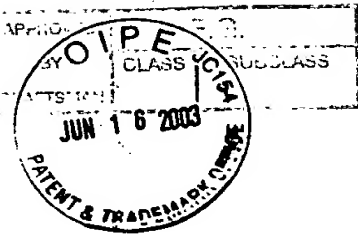
FIG. 4C



Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

Exon1 (>=90bp) CGGCAGgtgagcgccccgggg.intron(17618bp). tggcttctccacacagGAAAGC
 Exon2 (148bp) TCAGAGgtggctgggcagtg.intron(887bp). CTGTTTCCCTCTACAGGCCGAA
 Exon3 (62bp) ACACAGgtatggtctctgtc.intron(3343bp). tgttccctataaagGACTTG
 Exon4 (102bp) CCAGCTgtaagtagccacacc.intron(1642bp). ctctcttgcttcttagGTCCGA
 Exon5 (125bp) ACCAGGgttggtccccagatg.intron(602bp). tccctctgtccacagTCCCTG
 Exon6 (222bp) TATCAGgtatggccgagaggg.intron(1403bp). tgggttttcttccagGATGGG
 Exon7 (159bp) TCCGAGgtgagtcggggaag.intron(2588bp). gtcttctctttagGTCTCT
 Exon8 (108bp) CTGGAGgtaacatgggatgag.intron(917bp). actctgcctttgcagAAAGCT
 Exon9 (145bp) AACCAGgtgggaatgagtccc.intron(765bp). ttttccctcaaaagTGGTTA
 Exon10 (60bp) AATACGgtatttctctctgt.intron(1813bp). aattaccttccacagAGAAACA
 Exon11 (126bp) GCCGAGgtgattgttgggtac.intron(115bp). ttcttttctcaatagAACAA
 Exon12 (45bp) TGGAGgtaacgttctctccc.intron(1095bp). ctgttttctttacagATGGCT
 Exon13 (80bp) TGCCGGgttaagtctctact.intron(417bp). ctctctggctgccagGATCGC
 Exon14 (113bp) CTGCCGgtgagcactgggccc.intron(1160bp). tgccactgggtccagGTGTTT
 Exon15 (184bp) GAATACgttaagccacaggtc.intron(600bp). ttcttacctggcagGAAAGCC
 Exon16 (85bp) CGACAGgtgagttcggggaac.intron(824bp). ctctggccccacacagGCTACC
 Exon17 (146bp) AAAATgtgagggcagctctgt.intron(536bp). gtctctctctttcagATTGAA
 Exon18 (91bp) TGTATGgtgagcatcctctc.intron(352bp). cttttctgagcacagAGGGTA
 Exon19 (149bp) CTGCAGgtgaggaatctggg.intron(958bp). tctttctccccacagTGTAAAT
 Exon20 (86bp) GAACAGgttaacaaagggtct.intron(2867bp). ttgggtgttccccagGCCCGT
 Exon21 (70bp) GCCAAGgttaaaagaagtacag.intron(801bp). cattttgttctccagTTAAAG
 Exon22 (119bp) CGAAAGgtgagcaaggctgca.intron(1434bp). ctccggtaacccccagGATCTT
 Exon23 (1585bp)

FIG.4D



	I	IV	VI
DNMT1	DVFSGCGGLSEGFHQAG	DVEMLCGGPPCQGFSGVMR	YRPRFFLLENVRNFVSFKR
Dnmt1	DVFSGCGGLSEGFHQAG	DVEMLCGGPPCQGFSGVMR	YRPRFFLLENVRNFVSFRR
MET1(Ath)	DIFAGCGGLSHGLKKAG	QVDFINGGPPCQGFSGVMR	FRPRYFLLLENVRTFVSFNK
Masc1	DTFCGGGVSLGARQAG	HVDILHLSPPCQTFSSRAHT	VRPRLFTVEETDGIIMDRQS
Masc2	DIFAGCGGLTLGLDLSG	EVDFTYGGPPCQGFSGVMR	YKPRFVLLLENVKGILITTKL
Dnmt2	ELYSIGGMHHAALRESH	SFNMLMSPPCQPFTRIGL	KLPKYILLLENVKGFEVSST
M.Spr	SLFSGIGAFEAALRNIG	EFDLLVGGSPCQSFVAGH	KQPKFFVFLENVKGILINHDK
DNMT3A	SLFDGIATGLLVKDLG	PFDLVIGGSPCNDLSIVNP	DRPFFWLFENNVMGVSDK
Dnmt3a	SLFDGIATGLLVKDLG	PFDLVIGGSPCNDLSIVNP	DRPFFWLFENNVMGVSDK
DNMT3B	SLFDGIATGYLVVKELG	PFDLVIGGSPCNDLSIVNP	DRPFFWLFENNVMGVSDK
Dnmt3b	SLFDGIATGYLVVKELG	PFDLVIGGSPCNDLSIVNP	NRPFWMFENNVMGVSDK
Zmt3	SLFDGIATGYLVLRDLG	PFDLVIGGSPCNDLSIVNP	POPFFWLFENVTFMQTHVK
consensus	--F-G-----G	-----GG-PC--S--N--	--P-F--ENW-----

	IX	X
DNMT1	RVVSVRECARSGGFP	LFGNILDKHRQVGNVPPPLAKAIG
Dnmt1	RVVSVRECARSGGFP	FFGNILDRHRQVGNVPPPLAKAIG
MET1(Ath)	RILTVRECARSGGFP	FAGNINHKKRQIGNAVPPPLAFALG
Masc1	RKFTVRELACIQGFP	FVGTLTOKRRIIGNAVPPPLSAAIM
Masc2	RVYTVRELARAGGFP	GLGGVKKWHRNIGNAVPVLGEQIG
Dnmt2	RYFTPKELIANLQGFP	EKTTVKQRYRLIGNSLNVHVAKLL
M.Spr	RRLTPLECFRLOAFD	AGISNSOLYKQTGNSITVTVLESIF
DNMT3A	DILWCTEMERVFGFP	SNMSRLARQRLIGRSWSPVIRHLF
Dnmt3a	DILWCTEMERVFGFP	SNMSRLARQRLIGRSWSPVIRHLF
DNMT3B	DVLWCTELERIFGFP	SNMGRGARQKLLIGRSWSPVIRHLF
Dnmt3b	DVLWCTELERIFGFP	SNMGRGARQKLLIGRSWSPVIRHLF
Zmt3	DHIWITELERIFGFP	KSMGRPORQRLVIGKSWSPVIRHLL
consensus	-----E--R--GFP	-----R--G--P-----

FIG. 5A

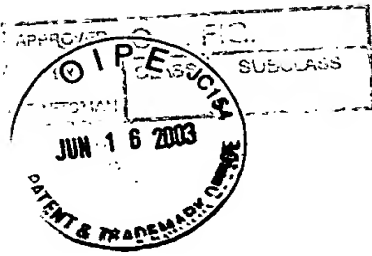
[illegible]

FIG. 5B

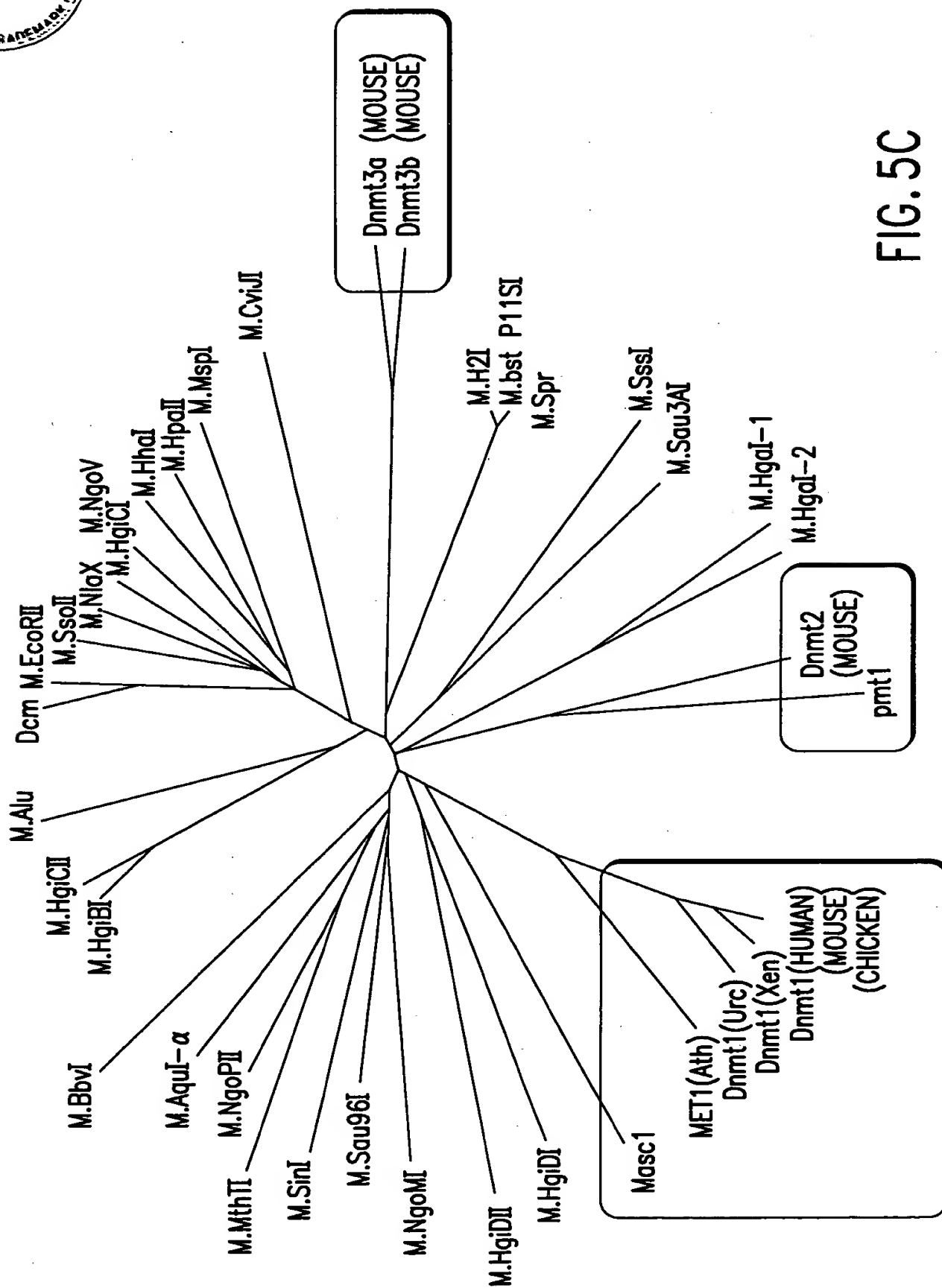
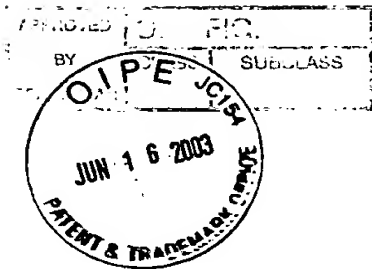


FIG. 5C

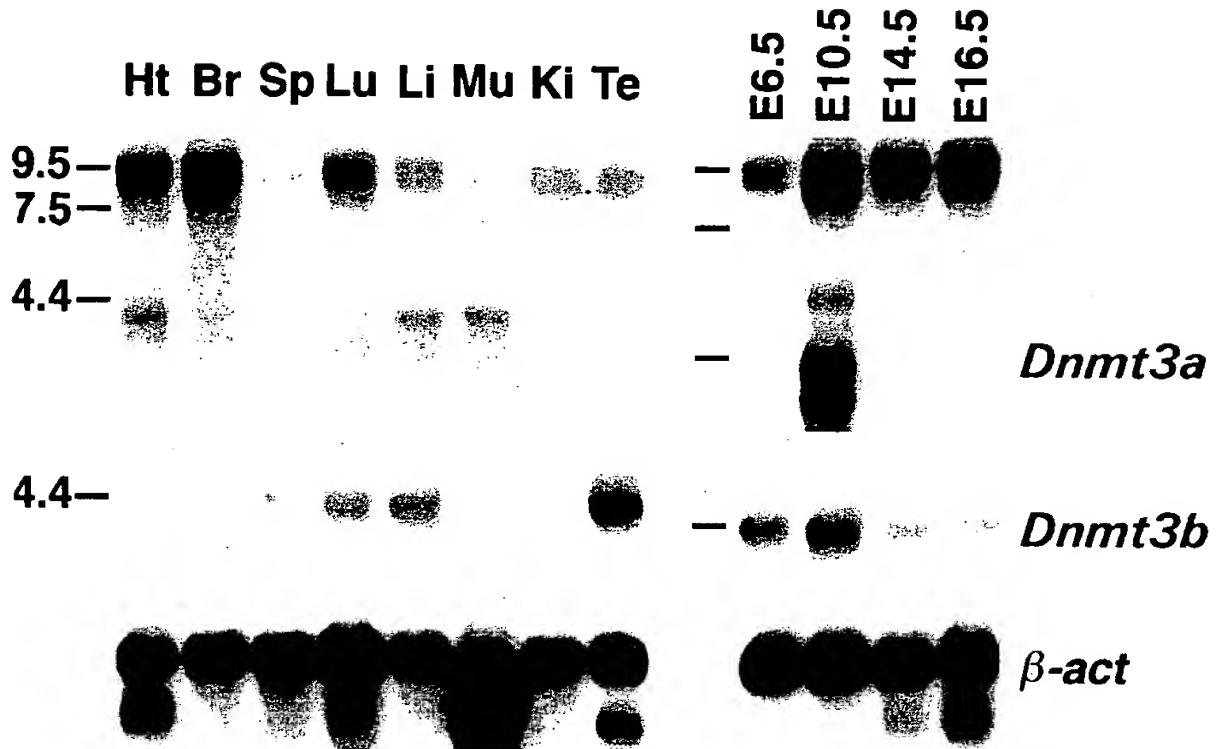


FIG.6A

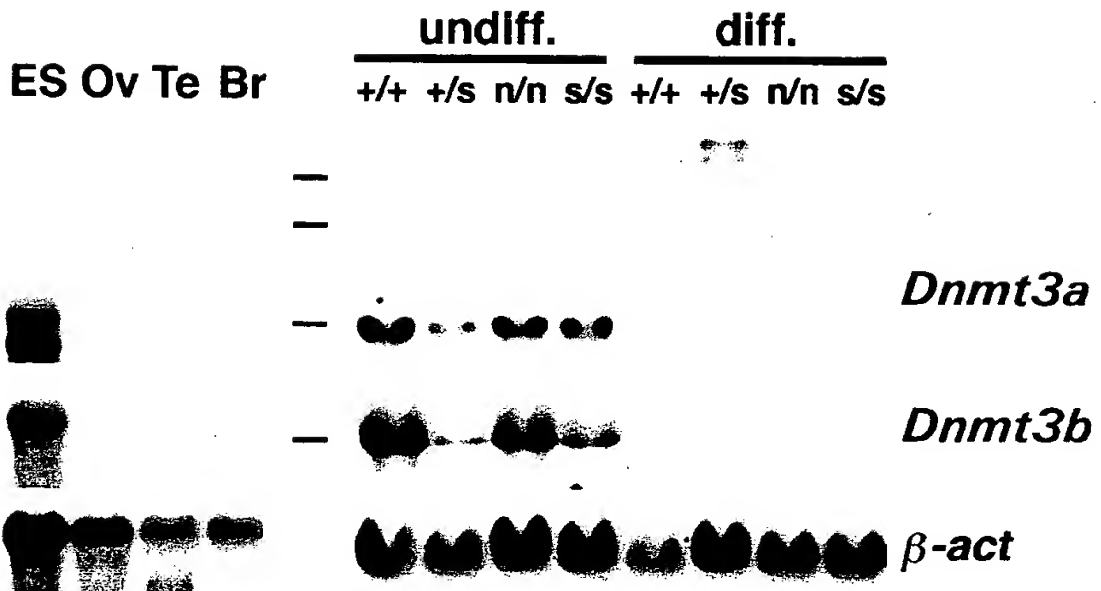


FIG.6B

FIG.6C

Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

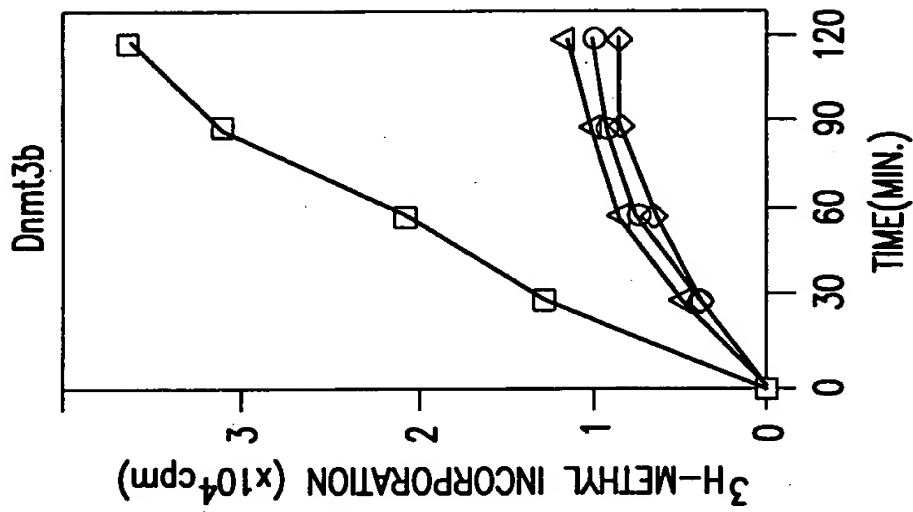
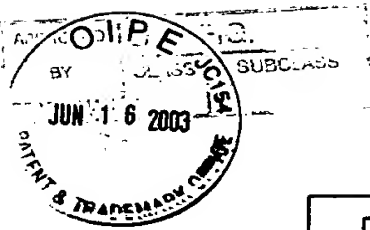


FIG. 7C

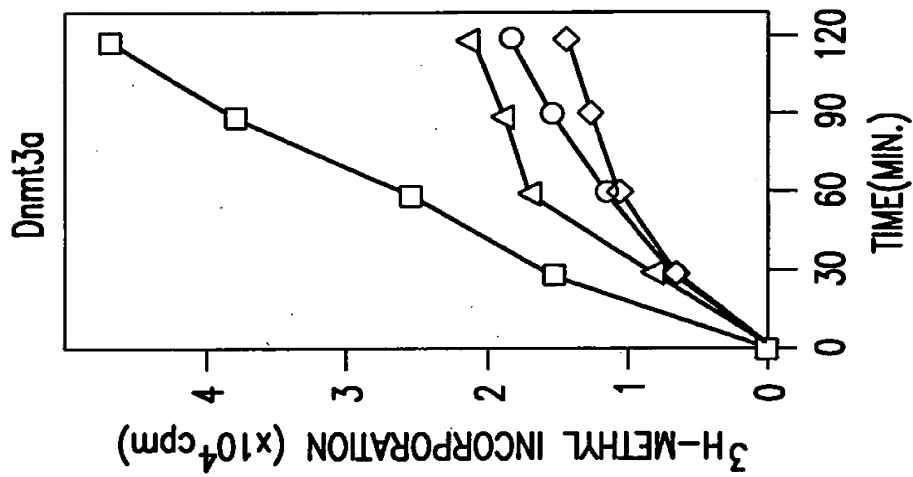


FIG. 7B

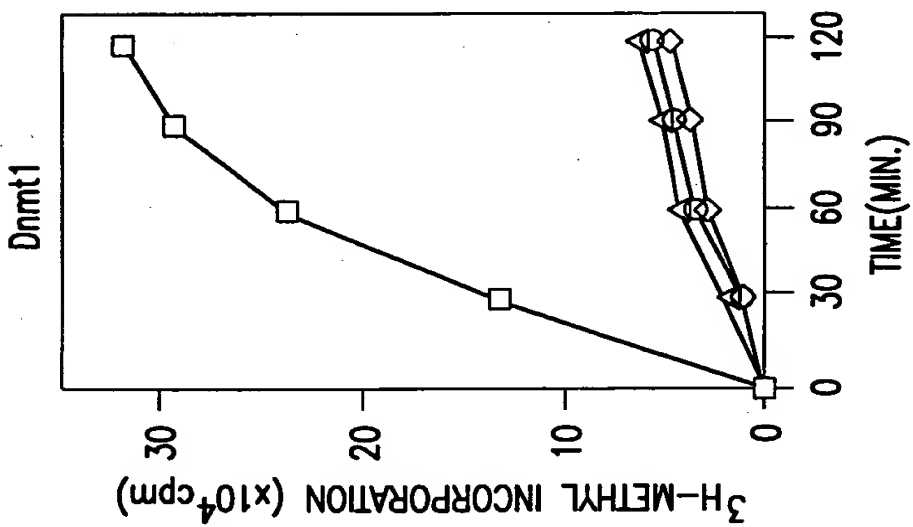


FIG. 7A

17581 U.S. PTO
 06/16/03



FIG. 7D

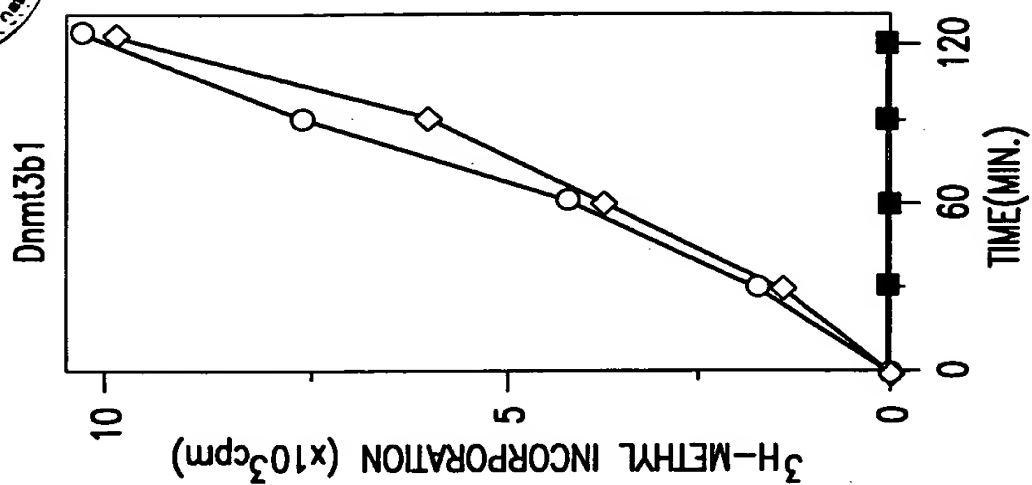


FIG. 8C

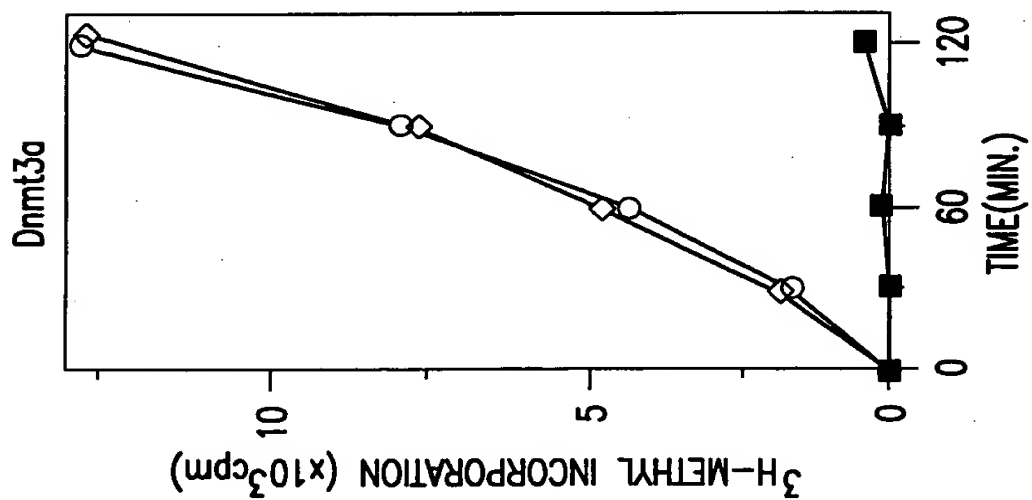


FIG. 8B

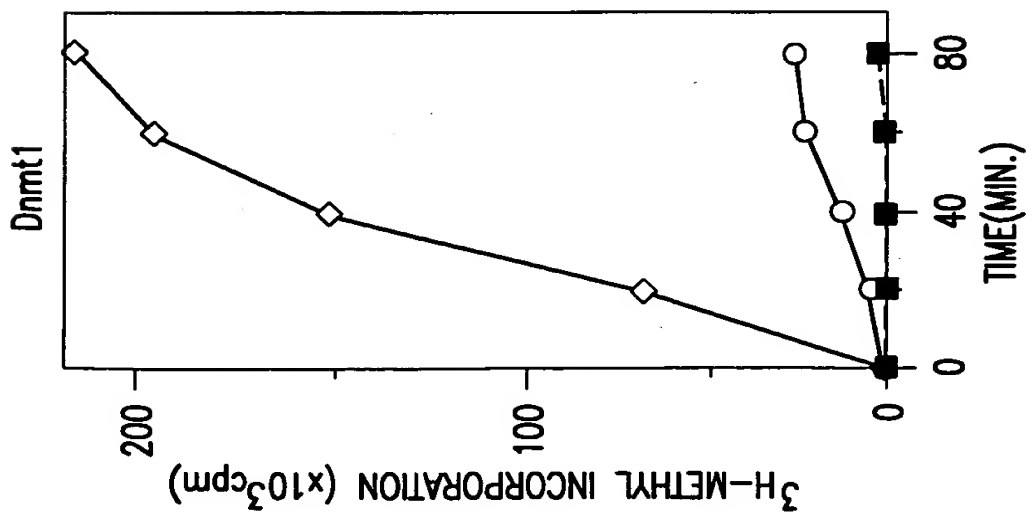


FIG. 8A

APPROVED	C. FIG.	
BY	CLASS	SUBCLASS
DATE/TIME		

Appl. No. 09/720,086; 102(e): July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

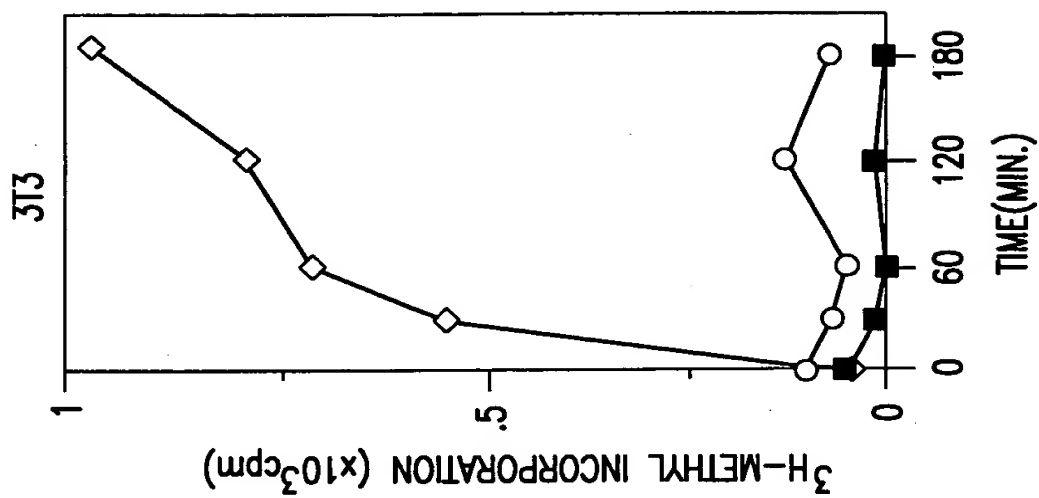


FIG. 8E

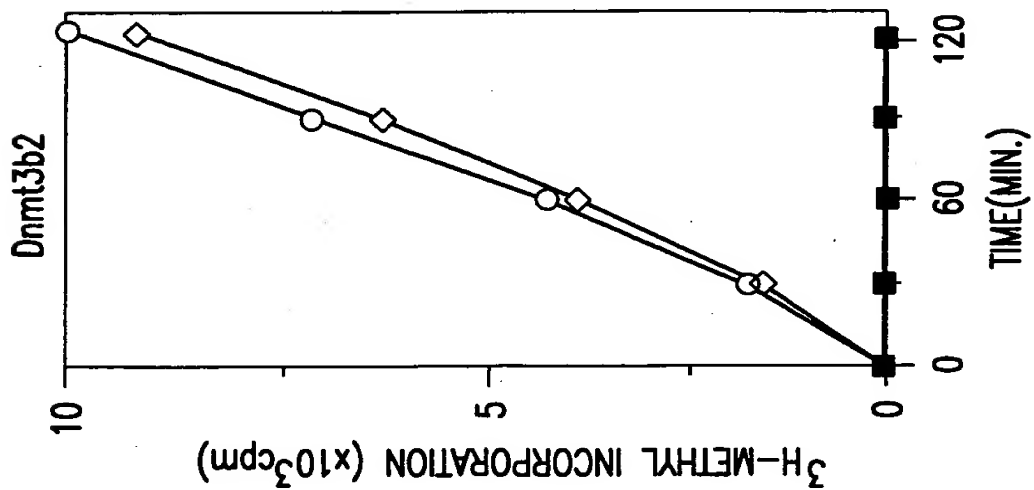
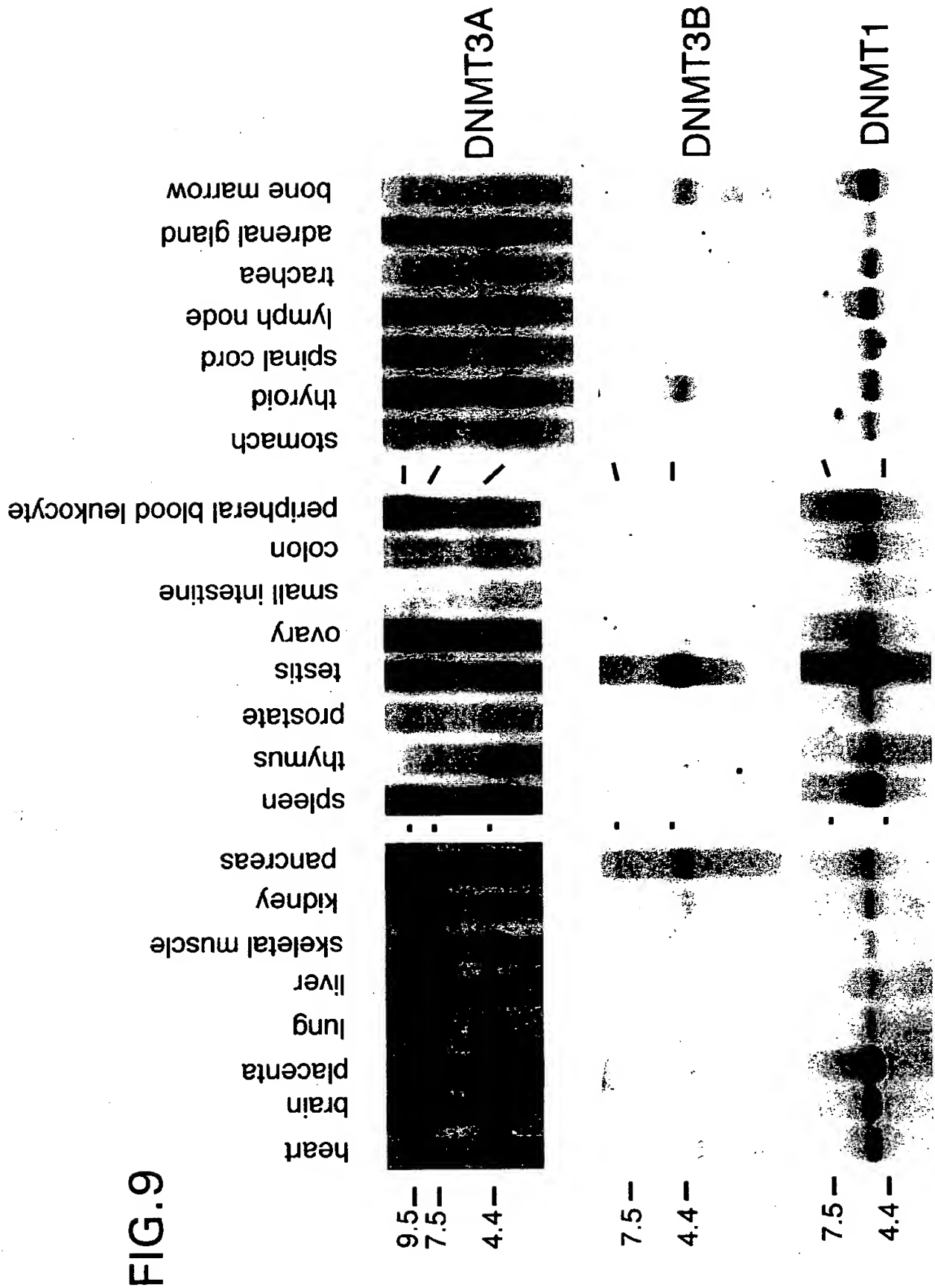


FIG. 8D

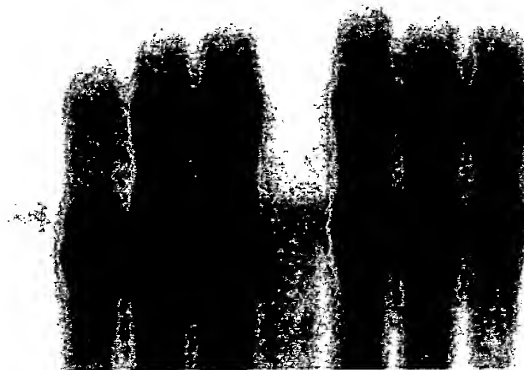


Appl. No. 09/720,086; 102(e); July 23, 2001
 Dkt. No. 0609.4560002/JAG/KRM/DJN; Group Art Unit: 1642
 Inventors: Li et al.; Tel: 202/371-2600
 Title: *De Novo* DNA Cytosine Methyltransferase Genes, Polypeptides
 and Uses Thereof

17581 U.S. PTO
 06/16/03

promyelocytic leukemia HL-60
 Hela cell S3
 chronic myelogenous leukemia K-562
 lymphoblastic leukemia MOLT-4
 Burkitt's lymphoma Raji
 colorectal adenocarcinoma SW480
 lung carcinoma A549
 melanoma G361

9.5 —
 7.5 —
 4.4 —



DNMT3A

7.5 —
 4.4 —



DNMT3B

7.5 —
 4.4 —



DNMT1

2.4 —
 1.4 —



b-Actin

RECEIVED
 JUL 1 2001
 U.S. PATENT & TRADEMARK OFFICE